Prepared for:
Valley of the Moon
Water District

FINAL

Urban Water Management Plan

2010



Prepared by:

WINZLER & KELLY

2235 Mercury Way, Suite 150
Santa Rosa, CA 95407
(707) 523-1010
www.w-and-k.com

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KEY ACRONYMS AND ABBREVIATIONS

ABAG	Association of Bay Area Governments
Act	Urban Water Management Planning Act
AFY	Acre-feet per year
BMP	Best Management Practice
Board	Valley of the Moon Water District Board of Directors
BO	Biological Opinion
cfs	Cubic feet per second
CDPH	California Department of Public Health
CII	Commercial, irrigation and institutional
CUWCC	California Urban Water Conservation Council
DFG	California Department of Fish and Game
DMM	Demand Management Measure
DWR	California Department of Water Resources
District	Valley of the Moon Water District
ETo	Evapo-transpiration of common turf grass
gpcd	Gallons per capita per day
gpd	Gallons per day
HETs	High-efficiency toilets
mgd	Million gallons per day
MCL	Maximum contaminant level
MOU	Memorandum of Understanding
NBWRP	North Bay Water Recycling Project
ND	New development standards and conservation measures
NMFS	National Marine Fisheries Service
PG&E	Pacific Gas and Electric
PVP	Potter Valley Project
Restructured Agreement	Restructured Agreement for Water Supply
River	Russian River
SCWA	Sonoma County Water Agency
SBx7-7	Water Conservation Act of 2009
SDC	Sonoma Development Center
SWRCB	California Water Resources Control Board
SV	Sonoma Valley
SVCSD	Sonoma Valley County Sanitation District
SVGMP	Sonoma Valley Groundwater Management Plan
SVRWP	Sonoma Valley Recycled Water Project
Tier 1	Tier 1 conservation measures
Tier 2	Tier 2 conservation measures
UFW	Unaccounted-for water
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
WWTP	Wastewater treatment plant

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SECTION 1
PLAN PREPARATION

1.1 INTRODUCTION

The State Legislature has declared that "every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years." This Urban Water Management Plan was prepared in close coordination with Valley of the Moon Water District (District) staff to ensure that it is reasonable in addition to meeting the requirements of the Urban Water Management Planning Act as envisioned by the Legislature.

1.1.1 Purpose

The purpose of developing an Urban Water Management Plan (UWMP) is to evaluate whether a water supplier can meet the water demands of its water customers as projected over a 20- or 25-year planning horizon. This evaluation is for a 25-year planning horizon and is accomplished through analysis of current and projected water supply and demand for normal, single-dry, or multiple-dry water year conditions. In addition, the purpose of the UWMP is to:

- Identify measures to be implemented or projects to be undertaken to reduce water demands and address water supply shortfalls, if shortfalls are identified;
- Identify stages of action to address up to 50 percent reduction in water supplies during dry water years;
- Identify actions to be implemented in the event of a catastrophic interruption in water supplies;
- Assess the reliability of the sources during normal, single-dry, and multiple-dry water years; and
- Identify when, how, and what measures the District could undertake in order to meet the State Legislature's call for a 20 percent per capita reduction in urban water use statewide by 2020.

The District supplies potable water to a population of approximately 23,000 people and approximately 200 businesses. The District's potable water supply is primarily water purchased from the Sonoma County Water Agency (SCWA) and water pumped from five groundwater wells owned and operated by the District, and one groundwater well that is leased by the District. The SCWA water supply is delivered to the District via the SCWA aqueduct system and is supplied with water from the natural flow of the Russian River.

1.1.2 Law

The State of California Urban Water Management Planning Act (Act) requires each urban water supplier with 3,000 or more connections, or which supplies at least 3,000 acre-feet per year (AFY) of water, to submit a UWMP to the California Department of Water Resources (DWR) every five years. The District has approximately 6,870 connections and meets the threshold for this State requirement.

For the current 2010 UWMP, a new requirement, SBx7-7, was passed by the California legislature and approved by the Governor. The bill amended the Act to require a 20 percent statewide reduction in urban potable water use by the year 2020. The water use reduction required by each water supplier varies by region and includes water savings targets measured in daily per capita use to be met by 2020 as well as an interim water savings target to be met by 2015. Each water supplier's 2010 UWMP will establish the

baseline use from which targeted reductions are made, making the 2010 UWMP a particularly important document. Because of the new SBx7-7 requirements, DWR extended the due date for submittal of the UWMP to July 1, 2011.

1.1.3 Structure of the Plan

The outline of this UWMP generally follows the *Guidebook to Assist Water Suppliers to Prepare a 2010 Urban Water Management Plan* developed by DWR. The guidelines can be found in the following website link: http://www.water.ca.gov/urbanwatermanagement/guidebook/.

Some sections of the outline presented in the guidelines have been combined or arranged in a different order than the guidelines, but all the information requested in the UWMP guidelines and Act is provided within this document. This document is organized in six (6) sections as shown on the Table 1.1. The table also includes a description of the key elements in the sections.

Table 1.1
Structure of the Plan

Section	Title	Key Elements
1	Plan Preparation	Introduction
		Coordination
		Plan Adoption, Submittal and Implementation
2	System Description	Service Area Physical Description
		Service Area Population
3	System Demands	Baselines and Targets
		Water Demands
		Water Demand Projections for Retailers
		Water Use Reduction Plan
4	System Supplies	Water Sources
		Groundwater
		Transfer Opportunities
		Desalinated Water Opportunities
		Recycled Water Opportunities
		Future Water Supply Projects
5	Water Supply Reliability and Water Shortage Contingency Planning	Water Supply Reliability
		Water Shortage Contingency Planning
		Drought Planning
		Water Quality
6	Demand Management Measures (DMMs)	Description of DMMs
		Implementation of DMMs

1.1.4 Level of Planning

The Act specifies the required content of each UWMP and allows for the level of detail provided in each UWMP to reflect the size and complexity of the water supplier. The Act requires projections in five-year increments for a minimum of 20 years. This UWMP considers a 25-year planning horizon through year 2035.

1.1.5 Assumptions

The evaluation and projections in this document are based on the District's current understanding of its water supply contract with the SCWA and its planned (future) water supply projects. This document is a "living" document (i.e., intended to be updated every five years) and as the District's water supply picture changes, the updated UWMP will incorporate those changes accordingly.

1.2 COORDINATION

This section describes the various agencies, districts and stakeholders that were involved or the District communicated with to obtain input and information in preparing this UWMP.

1.2.1 Agency Coordination

The District meets regularly with other water purveyors. In particular, the District meets at least monthly with its water wholesaler, SCWA, and with other water contractors who purchase water from the SCWA. This monthly coordination has been instrumental in coordinating water supply and demand analyses for the preparation of this document. The District meets more often with the City of Sonoma, also a water contractor to the SCWA, because of its shared delivery system through the SCWA aqueduct system that transports water from the Russian River to Sonoma Valley.

The table below identifies the various agencies that the District is coordinating with during the UWMP preparation process.

Table 1.2 (DWR Table 1)
Coordination with Appropriate Agencies

Coordinating Agencies	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan [a]	Was sent a notice of intention to adopt	Not involved/ No information
Sonoma County Water Agency	✓	✓		✓	✓	✓	
Sonoma Valley County Sanitation District	✓			✓	✓	✓	
City of Sonoma	✓			✓	✓	✓	
City of Santa Rosa	✓			✓	✓	✓	
City of Rohnert Park	✓			✓	✓	✓	
City of Cotati	✓			✓	✓	✓	
City of Petaluma	✓			✓	✓	✓	
Town of Windsor	✓			✓	✓	✓	
North Marin Water District	✓			✓	✓	✓	
Marin Municipal Water District	✓			✓	✓	✓	
County of Sonoma				✓	✓	✓	✓

[a] Draft sent via website link.

1.2.2 Public Participation

Urban water suppliers are required by the Act to encourage active involvement of the community within the service area prior to and during the preparation of its UWMP. The Act also requires urban water suppliers to make a draft of the UWMP available for public review and to hold a public hearing regarding the findings of the UWMP prior to its adoption. In addition to sending notices to the various agencies listed in Table 1.2, the District also included a public notice in two local newspapers notifying the public of the District's intent to prepare its UWMP. The notice asked for public input during the preparation of the UWMP.

Table 1.3 identifies the public participation activities and the participants.

Table 1.3
Public Participation and Outreach

Date	Description	Participants
2010-2011	UWMP planning and coordination, discussion, projections at quarterly Water Advisory Committee (WAC) meetings	WAC Members, General Public
Feb. 3, 2011	Public notice of UWMP preparation	[Sonoma Sun]
Feb. 11, 2011	Public notice of UWMP preparation	[Sonoma Index-Tribune]
Feb. 22, 2011	Letters sent to Interested Parties	See List on Table 1.2 (DWR Table 1)
May 24, 2011	Public Hearing notice #1	[Sonoma Index-Tribune]
May 24, 2011	Draft UWMP 2010 released	District Board, General Public
May 31, 2011	Public Hearing notice #2	[Sonoma Index-Tribune]
Jun. 7, 2011	Draft UWMP 2010 public hearing	District Board, General Public

The findings of the Draft UWMP were presented before the District Board on June 7, 2011. The meeting was publicly noticed and the public given the opportunity to offer comments to the UWMP and to ask questions regarding the findings. A copy of the District Board's resolution of adoption is included in Appendix A.

1.3 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

The UWMP was adopted by the Board on June 7, 2011. The Final UWMP incorporates comments made by the District Board, Sonoma County Water Agency and the public. The Final UWMP is available for public viewing at the following website link: http://www.vomwd.com/ and at the District's main office during normal business hours. A copy of the Final UWMP will be submitted to the DWR, California State Library, and SCWA no later than 30 days after adoption by the Board (see Appendix A for transmittal letter). Comments to the Final UWMP made by the DWR (if any) and the District's responses to the comments will be available at the District's main office during normal business hours.

Implementation of the 2010 Final UWMP will be the responsibility of the General Manager and consists of the activities shown on the Table 1.4.

Table 1.4
Plan Implementation

Description	Guidance Document(s)	Activity	Timeframe
Water supply projects and Capital Improvement Program (CIP)	VOMWD Annual Budget	Preparation of Annual CIP for water supply projects	March, 2011-2015
Water supply reliability	Final UWMP	Continued coordination and collaboration with SCWA to acquire consistent Russian River water supply entitlement in accordance with water supply contract	Monthly meetings with Water TAC and quarterly meetings with WAC
Water demand reduction targets	SBx7-7, Final UWMP, Water Conservation Program	Ongoing tracking of GPCD and modifying Water Use Reduction Plan as needed	10% reduction by 2015; 20% reduction by 2020
Voluntary and mandatory Water conservation policies and procedures	Water shortage contingency plan in Final UWMP	Implement, as-needed, existing policies and procedures to incorporate elements from the revised contingency plan	Ongoing

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SECTION 2
SYSTEM DESCRIPTION

This section describes the physical characteristics of the District's water service area as well as current and projected population for the service area.

2.1 PHYSICAL AND POLITICAL ATTRIBUTES

The District's service area is located approximately 50 miles north of San Francisco and is adjacent to the City of Sonoma. The District's water service area extends from the Trinity Oaks Subdivision in the north to the Temelec Subdivision in the south end of Sonoma Valley (Figure 2.1). The service area is approximately 11.8 square miles and serves residential and commercial needs. Elevations in the existing service area range from approximately 90 feet above mean sea level to approximately 1,190 feet above mean sea level.

The water distribution system contains multiple pressure zones. The District's distribution system includes approximately 92 miles of water mains ranging in size from less than 2 inches up to 14 inches in diameter. More than 75 percent of water mains are either 6 or 8 inches in diameter, and more than 95 percent are between 4 and 12 inches in diameter. Most of the small diameter mains that were prevalent in the distribution system have been replaced in the past 10 years due to an aggressive capital improvement program. Additional summary information pertaining to the District's water system facilities can be found in the District's Master Water Plan prepared by Brelje & Race dated April 2007.

2.2 CLIMATE

The climate of the District is typical of that of the Napa and Sonoma County areas, characterized by summers that are dry and warm, and winters that are relatively mild with the majority of rainfall occurring during this season. The regional averages of the rate of evapo-transpiration of common turf grass (ETo), rainfall, and temperature are summarized in Table 2.1.

Table 2.1
Climate

	Standard average ETo[a], in	Average rainfall, in	Average Max/Min temperature[b]
January	1.0	6.21	57.2°F / 37.2°F
February	1.6	5.27	63.3°F / 39.9°F
March	3.0	4.05	66.5°F / 40.7°F
April	4.5	1.77	71.2°F / 42.2°F
May	5.6	0.82	77.3°F / 45.9°F
June	6.6	0.23	84.1°F / 49.7°F
July	7.1	0.03	88.6°F / 51.2°F
August	6.3	0.09	88.4°F / 50.7°F
September	4.7	0.34	86.3°F / 49.3°F
October	3.3	1.63	78.7°F / 45.4°F
November	1.5	3.87	66.0°F / 40.6°F
December	1.0	5.12	57.5°F / 37.0°F
Annual[c]	**46.2**	**29.43**	**73.8°F / 44.2°F**

[a] ETo, or evapo-transpiration, is the loss of water from evaporation and transpiration from plants; Data from Chapter 2.7 Model Water Efficient Landscape Ordinance, CCR, Appendix A, Valley of the Moon reference.

[b] Period of record: 1/1/1893 to 7/31/2010 from Western Regional Climate Center, http://www.wrcc.dri.edu; Station number 048351, Sonoma/Boyes Hot Springs, CA

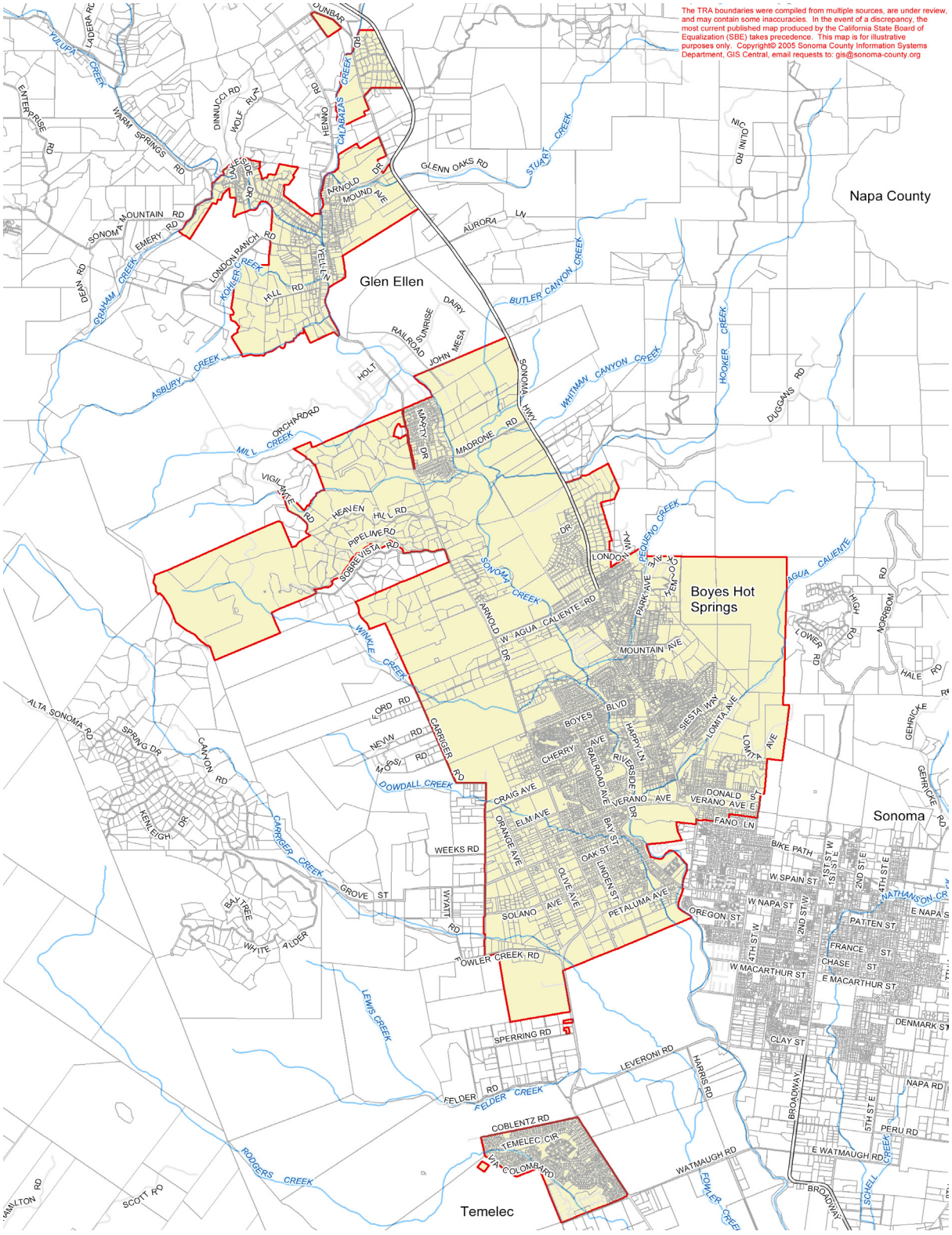
[c] The state WELO indicates a total of 46. 1, however when rounding to one decimal point, the total is 46.2.

The average annual rainfall is 29 inches per year and average annual ETo for the region is 46 inches per year. ETo is a measurement of water evaporation combined with plant transpiration and is expressed in the form of a rate, typically inches per time period. In other words, ETo is the amount of water needed for common turf to grow in a specific region.

The average annual ETo for turf in the region is approximately 21 inches more than the average annual precipitation. Because of this difference, and because 90 percent of the annual precipitation occurs between the months of November and April, growing turf in this region requires a significant amount of irrigation during the dry season.

2.3 SERVICE AREA POPULATION

The information provided in this section is from the document entitled *2010 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update* prepared by Maddaus Water Management dated November 22, 2010 ("Maddaus Demand Analysis") is herein referenced (see Appendix B). Excerpts and data in this section have been directly taken from the Maddaus Demand Analysis by permission of the District.



Source: Sonoma County Information Systems Department GIS Central, SBE, Sonoma County Assessor

Legend:

- VALLEY OF THE MOON COUNTY WATER DISTRICT (TRA FY 05 - 06)
- SPHERE OF INFLUENCE
- COUNTY OF SONOMA GIS PARCELS
- FREEWAY
- HIGHWAY
- STREET
- RIVER
- CREEK

Figure 2.1
Water Service Area

Valley of the Moon Water District
2010 Urban Water Management Plan

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There are various available demographic projections for use in this UWMP. The District selected population and employment projections based on the 2005 Sonoma County General Plan. A copy of the 2005 Sonoma County General Plan can be found at the following website link: http://www.sonoma-county.org/prmd/docs/gp/. Table 2.2 (DWR Table 2) below shows the current and projected population for the District's service area.

Table 2.2 (DWR Table 2)
Population – Current and Projected

Year	2010	2015	2020	2025	2030	2035
Service Area Population	23,478	24,174	24,873	25,229	25,586	25,943

In developing the population and employment forecasts used to review how future water supply could be affected, the Maddaus Demand Analysis was utilized.

The 2000 Census data was used as a general reference in the Maddaus Demand Analysis when determining population and household sizes for the District's service area. The 2005 total population and employment projections for the District's service area were both taken directly from the 2005 Sonoma County General Plan.

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SECTION 3
SYSTEM DEMANDS

This section of the Urban Water Management Plan (UWMP) presents the actual and projected number of water accounts and annual water use in 5-year increments between 2005 and 2035.

3.1 BASELINES AND TARGETS

One of the new requirements for completing an UWMP in 2010 under Senate Bill x7-7 (SBx7-7), the Water Conservation Act of 2009, is the requirement for each urban water supplier to develop a baseline daily per capita water use, establish a per capita water use target for 2020, and an interim water use target for 2015.

3.1.1 Base Daily Per Capita Water Use

The base daily per capita water use is the water supplier's average gross daily water use per capita measured in gallons. The baseline includes all water entering the delivery system, including water losses, except for recycled water delivered within the supplier's service area, water placed into long-term storage, or water conveyed to other urban water suppliers.

The purpose of developing a base daily per capita water use figure is to have a baseline from which to derive the 2015 and 2020 water use targets. The baseline water use is developed for each water supplier based on a 10-year average beginning no earlier than 1994 and ending no later than 2010. In some circumstances, water suppliers may use 15-year or 5-year averages.

For the development of the District's base daily per capita water use, a 10-year average was used which is based on data from 1995 to 2004. The District does not have a recycled water supply.

Table 3.1 (DWR Table 13)
Base Period Ranges

Base	Parameter	Value	Units
10- to 15-Year Base Period	2008 total water deliveries	3,329	AFY
	2008 total volume of delivered recycled water	0	AFY
	2008 recycled water as a percent of total deliveries	0	percent
	Number of years in base period[a]	10	years
	Year beginning base period range (FY Beginning July 1)	1995	--
	Year ending base period range[b] (FY Beginning July 1)	2004	--
5-Year Base Period	Number of years in base period	5	years
	Year beginning base period range	2003	--
	Year ending base period range[c]	2007	--

[a] If the 2008 recycled water percent is less than 10 percent of total water deliveries, then the base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the base period is a continuous 10- to 15-year period.

[b] The ending year must be between December 31, 2004 and December 31, 2010.

[c] The ending year must be between December 31, 2007 and December 31, 2010.

As shown in Table 3.2 (DWR Table 14), the base daily per capita water use is 147 gallons per capita per day (gpcd). The base daily per capita water use was developed using the total service area population. The gross water use includes all water entering the water delivery system, including water losses.

Table 3.2 (DWR Table 14)
Base Daily Per Capita Water Use — 10- to 15-Year Range

Base Period Year		Distribution System Population	Daily System Gross Water Use (mgd)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Fiscal Year [a]			
Year 1	1995-1996	19,467	2.92	150
Year 2	1996-1997	19,576	3.08	157
Year 3	1997-1998	19,658	2.81	143
Year 4	1998-1999	19,766	3.14	159
Year 5	1999-2000	19,836	3.16	160
Year 6	2000-2001	21,658	3.15	145
Year 7	2001-2002	21,734	3.08	142
Year 8	2002-2003	21,768	3.03	139
Year 9	2003-2004	21,878	3.19	146
Year 10	2004-2005	21,942	2.94	134
Base Daily Per Capita Water Use				**147**

[a] Water use data from the District was collected of a fiscal year, versus calendar year basis.

A second requirement for completing the 2010 UWMP is that the District determine its 5-year base daily per capita water use. If the 5-year base daily water use exceeds 100 gpcd, then the 2020 water use target established by the District must be less than or equal to 95 percent of this 5-year baseline. As shown in Table 3.3 (DWR Table 15), the 5-year base daily per capita water use is 138 gpcd

Table 3.3 (DWR Table 15)
Base Daily Per Capita Water Use — 5-Year Range

Base Period Year		Distribution System Population	Daily System Gross Water Use (mgd)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Fiscal [a] Year			
Year 1	2003-2004	21,878	3.19	146
Year 2	2004-2005	21,942	2.94	134
Year 3	2005-2006	22,303	3.06	137
Year 4	2006-2007	22,392	3.11	139
Year 5	2007-2008	22,382	2.98	133
Base Daily Per Capita Water Use				**138**

[a] Water use data from the District was collected on a fiscal year, versus calendar year basis; year shown is Fiscal Year Beginning July 1.

3.1.2 Water Use Targets (2015, 2020)

The purpose of SBx7-7 is to establish requirements for the State of California to reduce its statewide urban per capita water use by 20 percent by the year 2020. An interim target is set for 2015, which requires a 10 percent reduction in urban per capita water use. After year 2021, failure to meet the 2020 water use target constitutes a violation of law. Compliance of the 2015 and 2020 water use targets is also a requirement for eligibility for State water grants and loans.

3.1.2.1 Individual Targets

Under SBx7-7, each individual urban water supplier (i.e., the District) must develop a water use target for the year 2020 using one of four allowable methods. The 2015 interim target is a per capita water use figure which is halfway between the District's base daily per capita water use of 147 gpcd and the 2020 target. There is no penalty for an agency not achieving its 2015 interim target.

There are four methods established by the California Department of Water Resources (DWR) which an urban water supplier may use to develop its 2015 and 2020 water use targets. Three methods are provided in SBx7-7 and the fourth was subsequently established by the DWR. The four methods are generally described below. A more complete description can be found in DWR's *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* dated March 2011.

- Method 1: 80 percent of Base Daily Per Capita Use;
- Method 2: Performance standards based on actual water use data for indoor residential water use, landscaped area, and commercial, industrial, and institutional (CII) water use;
- Method 3: 95 percent of the San Francisco Bay hydrologic region (see Figure 3.1); and
- Method 4: Savings by water sector (indoor residential and CII) and landscape and water loss savings.

The District has elected to use Method 3 for the development of its individual water use target. The target under Method 3 is set by DWR and is 124 gpcd. The District's per capita water use targets in comparison to the projected per capita water use are shown in Table 3.4.

Table 3.4
Water Use Targets for Valley of the Moon Water District

Year	Projected Water Use, AFY [a]	Population [b]	Projected Per Capita Water Use, gpcd	SBx7-7 Water Use Target, gpcd	Meets Target?
2015	3,465	24,174	128	136	Yes
2020	3,445	24,873	124	124	Yes

[a] From Table 3.14

[b] Population projections from Section 2

Once the water use targets are determined, SBx7-7 requires confirmation that the water use targets meet the minimum water use reduction established by statute as described in Section 3.1.1. In the District's case, the 2020 water use target established must be less than or equal to 95 percent of 138 gpcd (131 gpcd).

3.1.2.2 Regional Targets

SBx7-7 provides that urban water retail suppliers may plan, comply and report on the 2020 water use target on a regional basis, an individual basis, or both. The District is one of nine Water Contractors to the Sonoma County Water Agency (SCWA) for purchase of Russian River water supply. The Water Contractors are eligible to form a regional alliance under the provisions of SBx7-7 because they are recipients of water from a common wholesale water supplier, the SCWA. A water conservation regional alliance among the nine

Water Contractors is already in existence and comprises the Sonoma-Marin Saving Water Partnership, effectively combining the regional water conservation efforts with regional alliance for purposes of meeting regional water use targets. The members of the alliance are as follows: Valley of the Moon, City of Sonoma, City of Santa Rosa, Town of Windsor, City of Rohnert Park, City of Cotati, City of Petaluma, Marin Municipal Water District, and North Marin Water District.

The DWR established three options for calculating a regional alliance target. The District, along with the other Water Contractors in the regional alliance, selected Option 1 for establishing the regional alliance target. Using Option 1, each member of the regional alliance calculates their individual targets and then weighs the individual targets by each member's population. The weighted targets are then averaged to determine the regional alliance target. Detailed calculations under the regional alliance can be found in Appendix C.1. The regional alliance per capita water use targets in comparison to the projected per capita water use are shown in Table 3.5.

Table 3.5
Regional Water Use Targets

Year	Projected Water Use, AFY [a]	Population [b]	Projected Per Capita Water Use, gpcd	SBx7-7 Water Use Target, gpcd	Meets Target?
2015	95,032	637,687	133	142	Yes
2020	94,602	659,825	128	129	Yes

[a] Projected use for Regional Alliance members (see Appendix C.1)

[b] Population projections for Regional Alliance members (see Appendix C.1)

The District Board approved becoming a member of the regional alliance and using regional targets at its Board meeting on March 1, 2011. A copy of the letter approving the District's membership in the regional alliance is included in Appendix C.2.

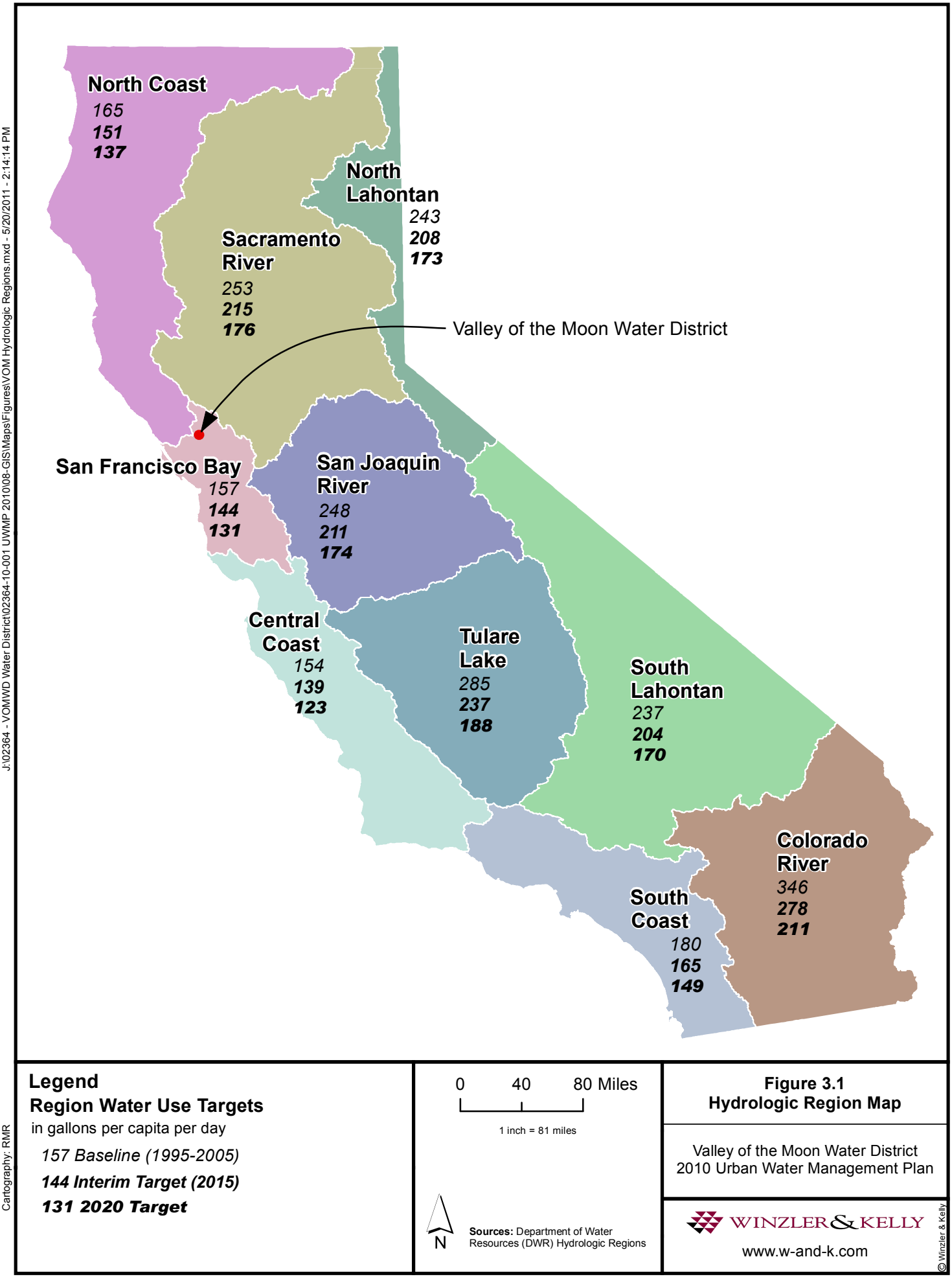
Becoming a member of the regional alliance will help the District focus efforts on regional water conservation programs that the Water Contractors intend to actively engage in through the Sonoma-Marin Saving Water Partnership. This regional effort provides for an "economies of scale" cost benefit for implementing regional programs and also provides for a consistent water conservation message throughout the region.

3.2 WATER DEMANDS

The water demand and water conservation savings analysis was conducted by Maddaus Water Management and presented in a report entitled *2010 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update* dated November 22, 2010 ("Maddaus Demand Analysis"). Excerpts and water demand data from the Maddaus Report are directly used in this section. A copy of the Maddaus Report can be found in Appendix B.

3.2.1 Past and Current Water Deliveries

Water use in the District's service area is predominantly residential use. The residential customers number close to 90 percent of the total water billing accounts and approximately 80 percent of the total water deliveries. Commercial customers are the next largest customer type while irrigation accounts are the smallest in terms of number of accounts and water deliveries. Fire line accounts were not included in the account estimates because they are part of commercial or multi-family customer accounts.



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Cartography: RMR

Legend

Region Water Use Targets

in gallons per capita per day

157 Baseline (1995-2005)

144 Interim Target (2015)

131 2020 Target

0 40 80 Miles

1 inch = 81 miles

N

Sources: Department of Water Resources (DWR) Hydrologic Regions

Figure 3.1
Hydrologic Region Map

Valley of the Moon Water District
2010 Urban Water Management Plan

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Past customer water use for the year 2005, as presented in Table 3.6 (DWR Table 3) was obtained from actual billing data for the various water use sectors.

Table 3.6 (DWR Table 3)
Water Deliveries — Actual, 2005 (AFY)

	2005				
	Metered		Not Metered		Total
Water Use Sectors	# of Accounts	Volume	# of Accounts	Volume	Volume
Single family	6,124	1,939	0	0	1,939
Multi-family	413	528	0	0	528
Commercial	165	214	0	0	214
Institutional	33	97	0	0	97
Industrial	0	0	0	0	0
Landscape - Residential	18	37	0	0	37
Landscape - Commercial	11	13	0	0	13
Other	0	0	0	0	0
Total	**6,764**	**2,828**	**0**	**0**	**2,828**

Current customer water use for year 2010 is presented in Table 3.7 (DWR Table 4) and is also based on actual billing data for the various water use sectors.

Table 3.7 (DWR Table 4)
Water Deliveries — Actual, 2010 (AFY)

	2010				
	Metered		Not Metered		Total
Water Use Sectors	# of Accounts	Volume	# of Accounts	Volume	Volume
Single family	6,187	1,632	0	0	1,632
Multi-family	429	456	0	0	456
Commercial	162	179	0	0	179
Institutional	32	81	0	0	81
Industrial	0	0	0	0	0
Landscape - Residential	20	26	0	0	26
Landscape - Commercial	12	14	0	0	14
Other	0	0	0	0	0
Total	**6,842**	**2,388**	**0**	**0**	**2,388**

3.2.2 Projected Water Deliveries

For purposes of water use projections, the Maddaus Report used a planning estimate for year 2010 and not the actual billing data presented in the previous table. The 2010 planning estimate is then used as a “take-off” point from which future demand projections are based. The reasons for using a planning estimate rather than basing the estimate on actual water demands area as follows: The 2010 actual demand is not a reasonable “take-off” point for future projections due to a cooler than normal 2010 summer resulting in lower summertime water use; water demand curtailment due to the economic climate in 2010; and also carryover residual reductions in water demands coming from a 2009 mandatory water conservation declaration. The planning estimate for 2010 water use was based on the 10-year average of 1997-2006 water use.

The land use and population assumptions for the water use projections are based on the 2005 Sonoma County General Plan (General Plan). The General Plan includes a population and jobs forecast for 2030 and

buildout. The population projection was linearly extended from 2030 to 2035 from the previous 5-year increment. The 2000 Census data was used as a general reference when determining population and household sizes for the District's service area.

Table 3.8 (DWR Table 5)
Water Deliveries — Projected, 2015 (AFY)

	2015				
	Metered		Not Metered		Total
Water Use Sectors	# of Accounts	Volume	# of Accounts	Volume	Volume
Single family	6,498	2,167	0	0	2,167
Multi-family	438	557	0	0	557
Commercial	176	241	0	0	241
Institutional	33	124	0	0	124
Landscape - Residential	18	77	0	0	77
Landscape - Commercial	12	18	0	0	18
Other	0	0	0	0	0
Total	**7,175**	**3,184**	**0**	**0**	**3,184**

Table 3.9 (DWR Table 6)
Water Deliveries — Projected, 2020 (AFY)

	2020				
	Metered		Not Metered		Total
Water Use Sectors	# of Accounts	Volume	# of Accounts	Volume	Volume
Single family	6,685	2,208	0	0	2,208
Multi-family	450	553	0	0	553
Commercial	181	240	0	0	240
Institutional	33	124	0	0	124
Landscape - Residential	18	77	0	0	77
Landscape - Commercial	12	19	0	0	19
Other	0	0	0	0	0
Total	**7,379**	**3,221**	**0**	**0**	**3,221**

The projections for 2020, if realized, would bring the District's per capita water use down to 124 gpcd, which equals the District's 2020 water use target.

Table 3.10 (DWR Table 7)
Water Deliveries — Projected, 2025, 2030, and 2035 (AFY)

	2025		2030		2035	
	Metered		Metered		Metered	
Water Use Sectors	# of Accounts	Volume	# of Accounts	Volume	# of Accounts	Volume
Single family	6,781	2,216	6,877	2,230	6,973	2,251
Multi-family	457	544	463	539	470	537
Commercial	184	238	187	236	190	236
Institutional	33	124	33	124	33	124
Landscape - Residential	18	77	18	77	18	77
Landscape - Commercial	12	19	12	19	13	19
Other	0	0	0	0	0	0
Total	**7,485**	**3,218**	**7,590**	**3,225**	**7,697**	**3,244**

3.2.3 Water Sold to Other Agencies

The District does not have water sales to other agencies. At the time of the writing of this UWMP, the District is in preliminary discussion with the City of Sonoma regarding an agreement for the sale and purchase of water during times of emergency (such as during an extreme hot spell or during a drought). Data for the potential Sonoma agreement is not included in the table below because the discussions have been preliminary and informal.

Table 3.11 (DWR Table 9)
Sales to Other Water Agencies (AFY)

Water Distributed	2005	2010	2015	2020	2025	2030	2035
Name of Agency (N/A)	--	--	--	--	--	--	--
Total	0	0	0	0	0	0	0

3.2.4 Actual and Projected Other Water Demands

Table 3.12 (DWR Table 10) shows unaccounted-for water, which is defined to be the difference between water produced and water sold to customers. This differential between water supply and metered water use includes system flushing, leak repair flushing, hydrant leaks, street sweeping, and known leaks that are subsequently repaired. The remainder is “unaccounted-for” water, that is, un-metered water and/or water leaking from the system, which increases due to an overall increase in demand. Unaccounted-for water can also result from meter inaccuracies. Unaccounted-for water is not included in the calculation for conservation programs.

The District is committed to minimizing its unaccounted-for water and staying within the industry average of 10 percent loss (maximum). Recently, the District entered into an agreement with the SCWA and International Business Machine Corporation (IBM) to collaborate on a pilot study to demonstrate the ability to reduce non-revenue water (NRW). NRW is defined as water that is being produced but is lost before it reaches the customer through real losses (i.e., system leaks) or apparent losses (i.e., theft or metering inaccuracies). The pilot study is also expected to provide solutions to reduce operational costs of the SCWA’s transmission system and the District’s distribution system through improved pressure management.

The pilot study program will evaluate the application of advanced analytics and optimization techniques to reduce NRW as well as provide improved pressure management of both the SCWA’s and the District’s distribution networks using data the SCWA and the District are currently collecting. The pilot study is being proposed as a First-of-a-Kind (FOAK) program through IBM. IBM's FOAK program is an attempt to bring IBM researchers and clients together in the marketplace to test new technologies on real business problems and growth opportunities. The proposed pilot study was selected through a competitive process over 25 other submitted projects at IBM and has received a commitment of approximately $3,000,000 of in-kind funding through IBM’s FOAK program for product development.

In addition, IBM will provide project management services necessary to support the pilot study project at an estimated cost of $100,000 to be paid by SCWA. Because the pilot study is a research project, there is a risk that a working solution will not be developed. However, if proven successful, the leak detection system will likely be of considerable interest to other retail water contractors that purchase wholesale water from the SCWA as well as water utilities nationwide.

The District has no other uses (e.g., groundwater recharge or conjunctive use) at this time. Table 3.12 (DWR Table 10) below shows actual losses for 2005 and 2010 and estimates losses for the years 2015 through 2035.

Table 3.12 (DWR Table 10)
Additional Water Uses and Losses (AFY)

Water Use	2005	2010	2015	2020	2025	2030	2035
Saline Barriers	0	0	0	0	0	0	0
Groundwater Recharge	0	0	0	0	0	0	0
Conjunctive Use	0	0	0	0	0	0	0
Raw Water	0	0	0	0	0	0	0
Unaccounted-for System Losses	477	274	480	486	485	486	488
Other (System Flushing)	56	48	0	0	0	0	0
Total	**533**	**322**	**480**	**486**	**485**	**486**	**488**

3.2.5 Summary of Total Water Uses

Table 3.13 presents the projected water conservation savings resulting from the District's conservation implementation plan described in Section 3.4.2. The projections for 2020, if realized, would bring the District's base water use demand down to 124 gpcd. This meets the District's 2020 water use target.

Table 3.13
Conservation Savings (AFY)

Existing Tier 1 Program, New Development Standards, Plumbing Code					
	2015	2020	2025	2030	2035
Conservation Savings (Tier 1 + ND)	199	263	276	287	299
Plumbing Code	118	193	259	310	350
Total Conservation Savings	**317**	**456**	**535**	**597**	**649**

Table 3.14 (DWR Table 11) summarizes the actual water use in 2005 and 2010 and projects water use for years 2015 through 2035. As with previous tables, water use for years 2005 and 2010 are actual water use figures.

Table 3.14 (DWR Table 11)
Total Water Use (AFY)

Water Use	2005	2010	2015	2020	2025	2030	2035
Total Water Deliveries [a] (from Tables 3.6 to 3.10)	2,828	2,388	3,184	3,221	3,218	3,225	3,244
Sales to Other Water Agencies (from Table 3.11)	0	0	0	0	0	0	0
Less Conservation Savings [b] (from Table 3.13)	n/a	n/a	(199)	(263)	(276)	(287)	(299)
Additional Water Uses and Losses (from Table 3.12)	533	322	480	486	485	486	488
Total	**3,361**	**2,710**	**3,465**	**3,444**	**3,427**	**3,424**	**3,433**

[a] For 2005 and 2010, water deliveries include conservation savings realized.

[b] Conservation savings for Tier 1 and New Development measures.

3.2.6 Lower Income Water Use Projections

SBx7-7 includes a new requirement for identifying water use projections for lower income households. Under the statute, a lower income household is defined under the California Health and Safety Code and is established to be 80 percent of median income, adjusted for family size. Based on Census data for the service area, the 80 percent median income figure is approximately $44,433. Lower income households are estimated to comprise approximately 36.6 percent of the total households. Table 3.15 (DWR Table 8) shows the projected water demands for lower income households based on 36.6 percent of the total single-family and multi-family residential projected water use.

Table 3.15 (DWR Table 8)
Lower Income Projected Water Demands (AFY)

Water Distributed	2015	2020	2025	2030	2035
Single-family residential	793	808	811	816	824
Multi-family residential	160	202	199	197	197
Total	**953**	**1,011**	**1,010**	**1,013**	**1,020**

3.3 WATER DEMAND PROJECTIONS FOR RETAILERS

The District's water supply primarily comes from water purchased from the SCWA. The District, along with eight other Water Contractors, has a water supply agreement with the SCWA for the purchase of Russian River water commonly referred to as the *Restructured Water Supply Agreement.*

The District has provided demand projections to the SCWA. However, as discussed in Section 3.2.2, the projected 2015 and subsequent years' water demands are based on a 2010 planning estimate. It is not known how much of this projected amount will actually occur. The District will be coordinating and working closely with the SCWA to determine the timing of capital improvement projects that may need to come online in order to meet the District's water demands.

Table 3.16 (DWR Table 12) provides the projected amount of water that the District expects to purchase from the SCWA to meet water demands in the future under normal water supply conditions. The remaining demand will be met with a combination of the District's own groundwater wells, water conservation implementation, and recycled water implementation. The SCWA's water supply and the District's groundwater and recycled water supply are further described in Section 4. The District's water conservation implementation is further described in Section 6.

2010 water use is not representative of normal water use characteristics for the SCWA and its customers (Water Contractors). From 2007 – 2010, the SCWA and the Water Contractors' water use was significantly affected by a number of factors including drought conditions, implementation of water shortage response plans, economic recession, and increases in residential and commercial vacancy. Lasting effects of the drought, water shortage, and economic recession, as well as a cool summer, significantly affected the SCWA and Water Contractors' 2010 water use and is not representative of normal water use characteristics. The methodology used for the SCWA and Water Contractors' demand projections for 2015 through 2035 are based on normal water use characteristics and do not incorporate the effects of the conditions described above.

Table 3.16 (DWR Table 12)
Retail Agency Demand Projections Provided to Wholesale Suppliers – AFY

Wholesaler	Contracted Volume	2010	2015	2020	2025	2030	2035
Sonoma County Water Agency	3,200	2,196	2,995	2,994	3,099	3,192	3,308
SVCSD (Recycled Water)	0	0	0	0	0	0	25

Note: 2010 is actual water purchased from wholesale supplier.

As shown in Table 3.16 (DWR Table 12), the District also plans to include recycled water in its water supply portfolio. The District is in discussion with the Sonoma Valley County Sanitation District (SVCSD) for the supply and delivery of recycled water. Because the cost of the conveyance and delivery system to serve District customers would be expected to be paid with grant funding, it is estimated that the system would not come online until 2035.

3.4 WATER USE REDUCTION PLAN

The phrases “Best Management Practices” (BMPs) and “Demand Management Measures” (DMMs) are used interchangeably throughout the Maddaus Report and also referred to in this UWMP as “conservation measures.” The District’s water use reduction plan is detailed in the Maddaus Report. The report identifies current and projected savings from the District’s conservation programs. The programs include the following categories:

- Tier 1. Tier 1 consists of BMPs that were originally identified and established by the California Urban Water Conservation Council (CUWCC). A Memorandum of Understanding (MOU) was voluntarily signed by many urban water agencies and environmental groups who pledged to develop and implement 14 conservation BMPs. The District became a signatory to the MOU in October 2001.
- Tier 2. Tier 2 consists of conservation measures beyond Tier 1. District staff conducted a review and screening of various conservation measures that included a water savings device or program that would result in a reduction in water uses. Tier 2 measures that were selected by the District for implementation included rain sensor retrofits, smart irrigation controllers, and landscape and irrigation requirements.
- New Development Standards (ND). These are a subset of Tier 2 measures which apply to new development. Conservation savings resulting from Cal Green building codes have been included as this affects all new development in California after January 1, 2011. The District does not have land use approval authority, but relies on the implementing ordinances of the County of Sonoma. The County ordinance for Cal Green was adopted and became effective on January 1, 2011.

3.4.1 Water Demand Reduction Goals and Programs

Based on the programs identified in the section above, the Maddaus Report identified a conservation savings of 649 AFY by 2035. This amount of conservation savings is a result of Tier 1, Tier 2, and ND programs. Also included in the conservation savings of 649 AFY are savings resulting from State-mandated plumbing code changes in the Building Code.

3.5 IMPLEMENTATION PLAN FOR GPCD REDUCTION

The implementation plan is discussed in detail in the Maddaus Report included in Appendix B. The plan is summarized below and includes the following conservation measures:

- CUWCC #1 – Residential Water Surveys, Interior
- CUWCC #1 – Residential Water Surveys, Outdoor
- CUWCC #3 – System Water Loss Reduction
- CUWCC #5a – Large Landscape Water Budgets
- CUWCC #5b – Large Landscape Audits
- CUWCC #6 – Washer Rebates
- CUWCC #7 – Residential Public Education
- CUWCC #9 – Commercial Water Audits
- CUWCC #14 – Residential Single Family Toilet Replacement
- Tier 2 – ND1, Rain Sensor Retrofit
- Tier 2 – ND2, Smart Irrigation Controller
- Tier 2 – ND8, Landscape and Irrigation Requirements

The District's service area has a high proportion of residential water use and a significant amount of outdoor water use. Consequently, residential conservation programs produce the most savings. The District's service area does not have a heavy manufacturing sector, so the conservation potential in the commercial sector is relatively low. The District's implementation plan includes projected water conservation savings from the measures listed above.

3.5.1 Current Plan and Economic Impacts

The economic analysis is shown in Table 18 of the Maddaus Report for Tier 1, Tier 2, and ND programs. The water utility benefit-cost ratio for the District's program is 1.14, community benefit-cost ratio is 0.83, and the utility cost of water saved is $529 per acre-foot. Based on the analysis provided in the Maddaus Report and the assumed avoided cost of new water, water conservation programs are cost-effective for the District.

3.5.2 Additional Measures for Future Reduction

The District's current implementation plan is expected to be adequate for the District to comply with its 2020 water use target; therefore, no additional measures are being considered at this time.

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SECTION 4
SYSTEM SUPPLIES

This section describes the surface water, groundwater and recycled water supply sources, quantities, supply constraints, and future water supply projects. The District primarily uses surface water purchased from the Sonoma County Water Agency (SCWA) and to a lesser degree, local groundwater supply. The District proposes to use recycled water in the future.

4.1 SCWA WATER SUPPLY

Under normal water year conditions, approximately 85 percent of the District's water supply is surface water purchased from the SCWA. More detailed information regarding SCWA's water supply and facilities can be found in SCWA's Urban Water Management Plan at the following link: www.scwa.ca.gov/uwmp/. A general description of the SCWA Water Supply and Transmission System follows.

The District's water supply is conveyed through ten turnouts from the Sonoma Aqueduct that is owned and operated by the SCWA. The turnouts are spread along the aqueduct from just north of Trinity Road and Highway 12 south to Verano Avenue and Fifth Street West near the City of Sonoma. The SCWA aqueduct system is supplied water from the natural flow of the Russian River. Russian River water is stored in winter behind Warm Springs Dam for later release from Lake Sonoma; water is also stored in winter and other times of the year behind Coyote Dam for later release from Lake Mendocino. These dams are federal projects under the jurisdiction of the U.S. Army Corps of Engineers. The SCWA is the local sponsor and partners with the U.S. Army Corps of Engineers for the water supply portion of the reservoir projects. The SCWA owns and operates the water supply pools at both Lake Sonoma and Lake Mendocino. The water supply pool of Lake Sonoma is 212,000 acre-feet and Lake Mendocino is 111,000 acre-feet.

The SCWA also owns and operates three groundwater supply wells located in the Santa Rosa Plain groundwater basin. Information and sufficiency analysis of the SCWA groundwater wells can be found in the SCWA's UWMP at the website link noted above.

The SCWA uses about 14 miles of the natural channel of Dry Creek and about 8 miles of the Russian River to convey water from Lake Sonoma to its diversion facilities. Water is diverted from the stretch of river located just upstream of Wohler Bridge and downstream of Mirabel via six Ranney Collectors. Because the water has gone through an array of intake laterals, it only needs the addition of chlorine to meet California Department of Public Health drinking water quality standards. A system of aqueducts, booster pumps and tanks then distribute the water to the various water contractors and other water transmission system customers, including the Marin Municipal Water District. The system was designed and planned to meet peak day demands of its customers (see Figure 4.1).

The existing Sonoma Aqueduct facilities south of the Oakmont community in Santa Rosa serve the District and the City of Sonoma. The main booster pump station for the aqueduct is the Sonoma booster pumping station and is located on the east side of Spring Lake. A minor booster pump station is the Eldridge BST located near Glen Ellen and is typically off-line. Two water storage above-ground tanks are located near Oakmont known as Annadel No. 1 and Annadel No. 2 (also referred to as Los Guillicos Tank) and a third tank known as Eldridge Tank.

4.2 OTHER EXISTING AND PLANNED WATER SOURCES

The District uses local groundwater supply and proposes to use recycled water in the future. A detailed discussion of the District's groundwater supply is included in Section 4.3. A detailed discussion of the District's proposed recycled water supply is included in Section 4.4.

4.3 GROUNDWATER

The District's water supply comes predominantly from purchased surface water from the Sonoma County Water Agency (SCWA). Approximately 15 percent of the District's water supply is from local groundwater supply wells.

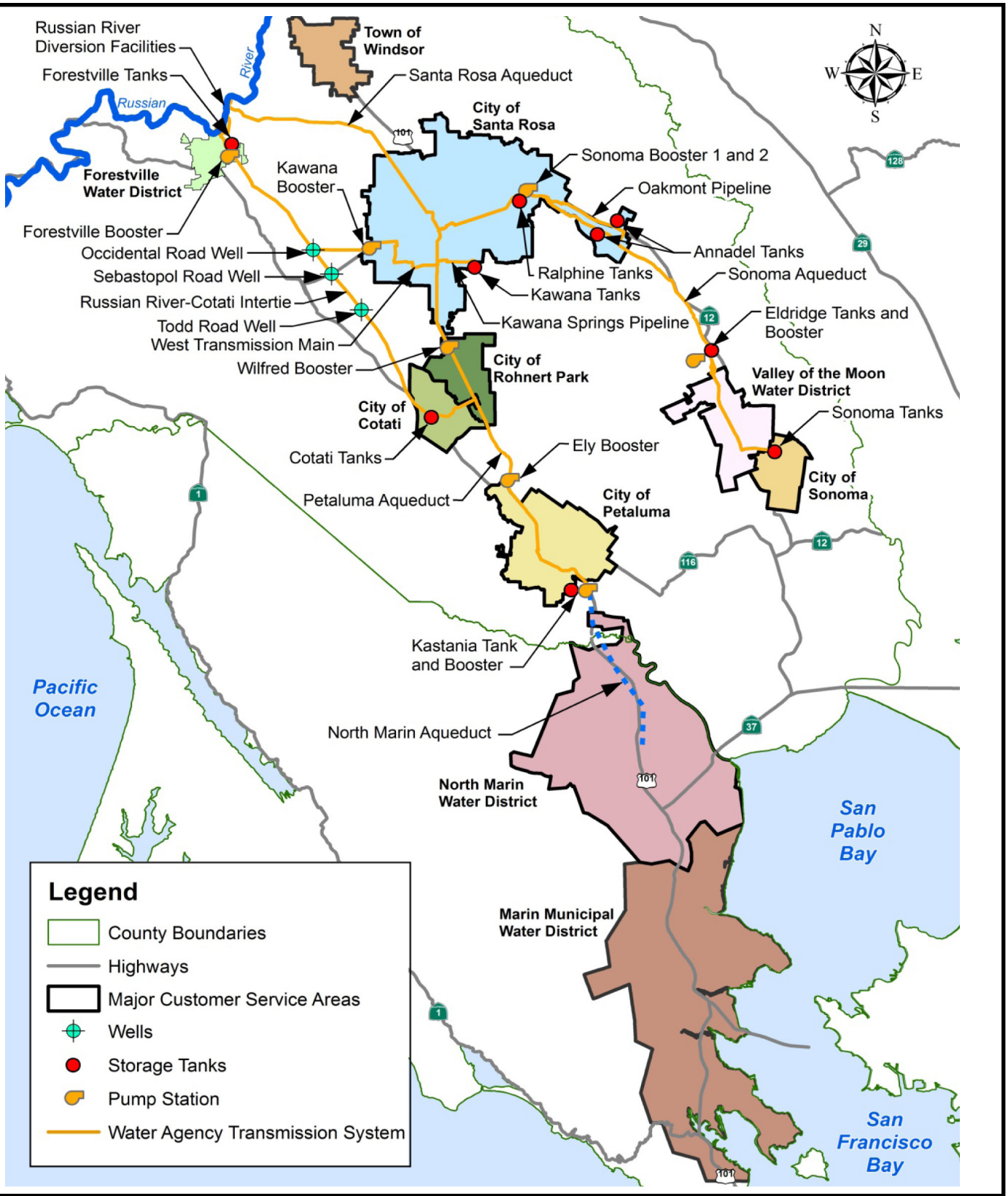
This section provides a description of the groundwater wells, the Sonoma Valley Groundwater Management Plan (SVGMP) prepared since the 2005 UWMP, updated hydrogeology of the basin, the District's groundwater supply and water quality, as well as the sufficiency of the groundwater for projected groundwater pumping. The groundwater supply facilities are described in Section 2. The description of the groundwater basin that supplements SCWA's supply is described in SCWA's 2010 UWMP and is not repeated in the District's UWMP.

4.3.1 General Description

The District is currently using its own groundwater wells and a leased well to help meet demand. It is the District's intent to use its wells to meet peak summer month demands. The District pumps groundwater from a total of six local wells, including five active District-owned wells and one additional leased well, that all supplement the water obtained from SCWA (see Figure 4.2). A new well, the Verano Well, was drilled and activated in 2008 to have a more reliable backup groundwater source. The District wells are as follows:

Table 4.1
Status of Supply Wells shown on Figure 4.3

Well ID	Activity
Agua Caliente Well 4910012-001	Active
Donald Avenue Well 4910012-002	Active
Larbre Well (Leased) 4910012-003	Active
Mountain Avenue Well 4910012-004	Active
Park Avenue Well 4910012-005	Active
Trinity Oaks Well 4910012-006	Inactive
Verano Avenue Well 4910012-019	Active



Source: Sonoma County Water Agency 2010 UWMP

Note: VOMWD Service Area shown is approximate. For an accurate illustration of the Service Area, refer to Figure 2.1.

Figure 4.1
SCWA Service Area and Water Transmission System Facilities

Valley of the Moon Water District
2010 Urban Water Management Plan

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4.3.2 Groundwater Management Plan

Between 2006 and 2007, the SCWA, the District, the City of Sonoma and a broad range of stakeholders who live in the Sonoma Valley completed a groundwater management planning process to help ensure the long-term sustainability of the basin's groundwater resources. A groundwater management plan, consistent with Assembly Bill 3030 (and as subsequently modified by Senate Bill 1938) was prepared in 2007. A copy of the SVGMP can be found at the following link: http://www.scwa.ca.gov/svgroundwater/ .

The SVGMP indicated that in the year 2000, more than half the water demand in the valley was met with groundwater (57 percent), followed by imported water (36 percent), with the remaining demand met from recycled water (7 percent) and local surface water (not quantified). The largest use of groundwater was for irrigation (72%), with rural domestic use at 19%, and municipal/urban demand was only 9% (SVGMP, 2008). The SVGMP also indicated that the Sonoma Valley had experienced significant growth and land-use changes in the last 30 years, especially with regard to irrigated agriculture, such as vineyards. The SVGMP indicated that there were some areas of declining groundwater levels, potential water quality problems from sea water intrusion (south of the District's service area), upwelling of geothermal waters and groundwater/surface-water interaction, all of which are being analyzed and updated annually as additional data and as analyses are completed and are available.

USGS modeling had been completed in 2006 (USGS, 2006) and was also used in the SVGMP to evaluate the effects of increasing demands on the groundwater between 2001 and 2030 and effects during normal and dry year weather scenarios. Based on the modeling effort, valley-wide groundwater use was projected to increase from the 8,500 acre-feet per year in 2000 to an estimated 10,100-11,300 acre-feet per year in 2030. The increase in demand in Sonoma Valley pumping was estimated to result in a reduction of 16,000 to 22,000 acre-feet from aquifer storage and would likely result in lower groundwater levels and associated potential adverse impacts such as salinity intrusion, potential land subsidence, etc. The SVGMP program determined Basin Management Objectives (BMOs) are needed and should concentrate on:

- Maintaining groundwater elevations;
- Improved water use efficiency and conservation;
- Identifying and protecting groundwater recharge areas and enhance recharge where appropriate;
- Managing and protecting groundwater quality for beneficial uses including minimizing saline intrusion;
- Protecting against adverse interactions between groundwater and surface water flows; and
- Improving the community's awareness of groundwater planning, resources and legal issues.

Each year since the SVGMP was prepared, an Annual Report has been prepared, summarizing the accomplishments of the prior year and then a workplan is prepared for the following year. In the 2009 Annual Report, the program indicated that coordinated groundwater level monitoring was expanded to include over 130 wells in the Valley, and developed plans for long term water quality monitoring. It also indicated that educational guides were prepared for property owners to better develop ways to conserve and manage groundwater.

The 2009 Annual Report separated the groundwater into two zones: one less than 200 feet (shallow) and one greater than 200 feet (deeper), where groundwater levels were relatively stable and predominantly remain above sea level but were as low as 45 feet below sea level in two deeper zone well areas. The report identified one of the possible groundwater depression areas as being located near two District wells and

the other located southeast of the City of Sonoma. Although the depression is located near the District's Verano and Larbre wells, other pumping wells are also indicated in the area. The report indicated it was unclear as to whether these are long-term trends, more recent trends or from the drought years between 2007 and 2009. In 2010, SCWA added a few pressure transducers in representative wells to further define the depression seen in the southwest portion of the City of Sonoma so as to begin to better understand these indicated depressions. The 2010 Annual Report was not available by the production date of this UWMP.

The 2011 SVGMP work plan indicated goals to update the groundwater flow model to fully couple surface water and groundwater flow, develop educational materials to highlight current success stories of vintners water conservation practices; expand water quality monitoring; install two monitoring wells to further understand water quality concerns at multiple groundwater zones, and participate in development of the Salt and Nutrient Management Plan for the Valley.

4.3.3 Description of Groundwater Basin

In general, the District is located within the Sonoma Valley Groundwater Subbasin identified by the Department of Water Resources as 2-2.02 and is a subbasin of the Napa-Sonoma Valley Groundwater Basin (2-2). The Sonoma Valley is one of three subbasins that drain south-southeast into San Pablo Bay (DWR, 2003) (Figure 4.3).

4.3.3.1 Hydrogeology of Subbasin

The Sonoma Valley is located within the North Coast Ranges geomorphic province of California. The Sonoma Mountains flank the west side of the subbasin with the Mayacmas Mountains bounding the basin to the east. The Valley between the two is dominated by Sonoma Creek. The Valley is not uniform in width or slope and can be divided into three parts, based on topography. The middle part of the valley is much narrower than the upper part or the lower part. This part of the valley is where the District is located (USGS, 2006).

The water-bearing deposits underlying the District include younger and older Quaternary alluvium deposits, the Huichica and Glen Ellen Formations, and the Sonoma Volcanics. The thickness and extent (if any) of the Miocene to Pliocene Petaluma Formation beneath the District is unknown, and the Mesozoic Franciscan Complex bedrock is not exposed or encountered in wells (USGS, 2006a).

The younger Quaternary alluvium consists of stream channel, flood plain, alluvial fan, and salt marsh deposits of late Pleistocene to recent age. The younger alluvium has a large percentage of loose sand and gravel yielding water easily to wells; however, it is only a thin veneer and most wells penetrate the full thickness (Kunkel and Upson, 1960; USGS, 2006a).

The older Quaternary alluvium is composed of lenticular deposits of poorly sorted clay, silt, sand, and gravel, and is late Pleistocene in age. The older alluvium underlies the younger alluvium and is separated by an erosional unconformity (Kunkel and Upson, 1960). Wells that encounter sands and gravels in the older alluvium can yield as much as 500 to 1,000 gpm (Luhdorff & Scalmanini, 1999). According to the USGS, the Quaternary alluvium may be as much as 300 feet in the center of the valley (USGS, 2006a).

3000 0 3000

DONALD HYDRO–PNEUMATIC TANK H–2
DONALD TANK T–3 AND PUMP STATION PS–2
DONALD WELL W–1
VERANO AND FIFTH TURNOUT PRV–3
WEST NAPA STREET
BOYES SPRINGS TANK T–5 AND PUMP STATION PS–3
CHESTNUT HYDRO–PNEUMATIC TANK H–3
BOLLI TANKS T–6 AND T–7
VERANO AVENUE
VERANO AND MAIN TURNOUT PRV–2
CHESTNUT TANK T–8 AND PUMP STATION PS–4
MOUNTAIN AVENUE WELL W–3
AGUA CALIENTE PUMP STATION PS–5 AND WELL W–5
VERANO TURNOUT PRV–1
LEVERON ROAD
WEST WATMAUGH ROAD
AGUA CALIENTE ROAD
PARK AVE. WELL W–4
ARNOLD DRIVE PUMP STATION PS–1
HANNA TURNOUT AND AGUA CALIENTE ROAD PUMP STATION PS–10 AND PRV 7
16" SONOMA AQUEDUCT
VERANO WELL
MADRONE ROAD
AGUA CALIENTE TURNOUT PRV–6
LABRE WELL (LEASED)
MADRONE TURNOUT PRV–9
BOYES BLVD. TURNOUT PRV–4
ALTIMIRA TURNOUT PRV–5
TRINITY OAKS TANK T–13 HYDRO–PNEUMATIC TANK H–1 AND WELL W–6
HANNA LOWER PRV–13
HANNA UPPER PRV–8
TEMELEC TANKS T–1 AND T–2
HWY. 12
SCWA ELDRIDGE TANKS
16" SONOMA AQUEDUCT
ARNOLD DRIVE
HANNA TANK T–9
GLEN ELLEN TURNOUT PRV–11
ELDRIDGE PRESSURE SUSTAINING VALVE PRV–10
GLEN ELLEN PUMP STATION PS–9
LOWER HEAVEN HILLS PUMP STATION PS–6
SOBRE VISTA MUTUAL METER
LOWER SOBRE VISTA TANK T–10 AND UPPER HEAVEN HILLS PUMP STATION PS–7
UPPER SOBRE VISTA TANK T–11
SADDLE PUMP STATION PS–8
TRINITY OAKS TURNOUT PRV–12
SONOMA MOUNTAIN PUMP STATION PS–11
HILL TANK T–4
SADDLE TANK T–12
SONOMA MOUNTAIN LOWER TANK T–14
SONOMA MOUNTAIN PUMP STATION PS–12
SONOMA MOUNTAIN UPPER TANK T–15
WARM SPRINGS ROAD

Source: County of Sonoma, April 2007

Figure 4.2
VOMWD Water Facilities Map

Valley of the Moon Water District
2010 Urban Water Management Plan

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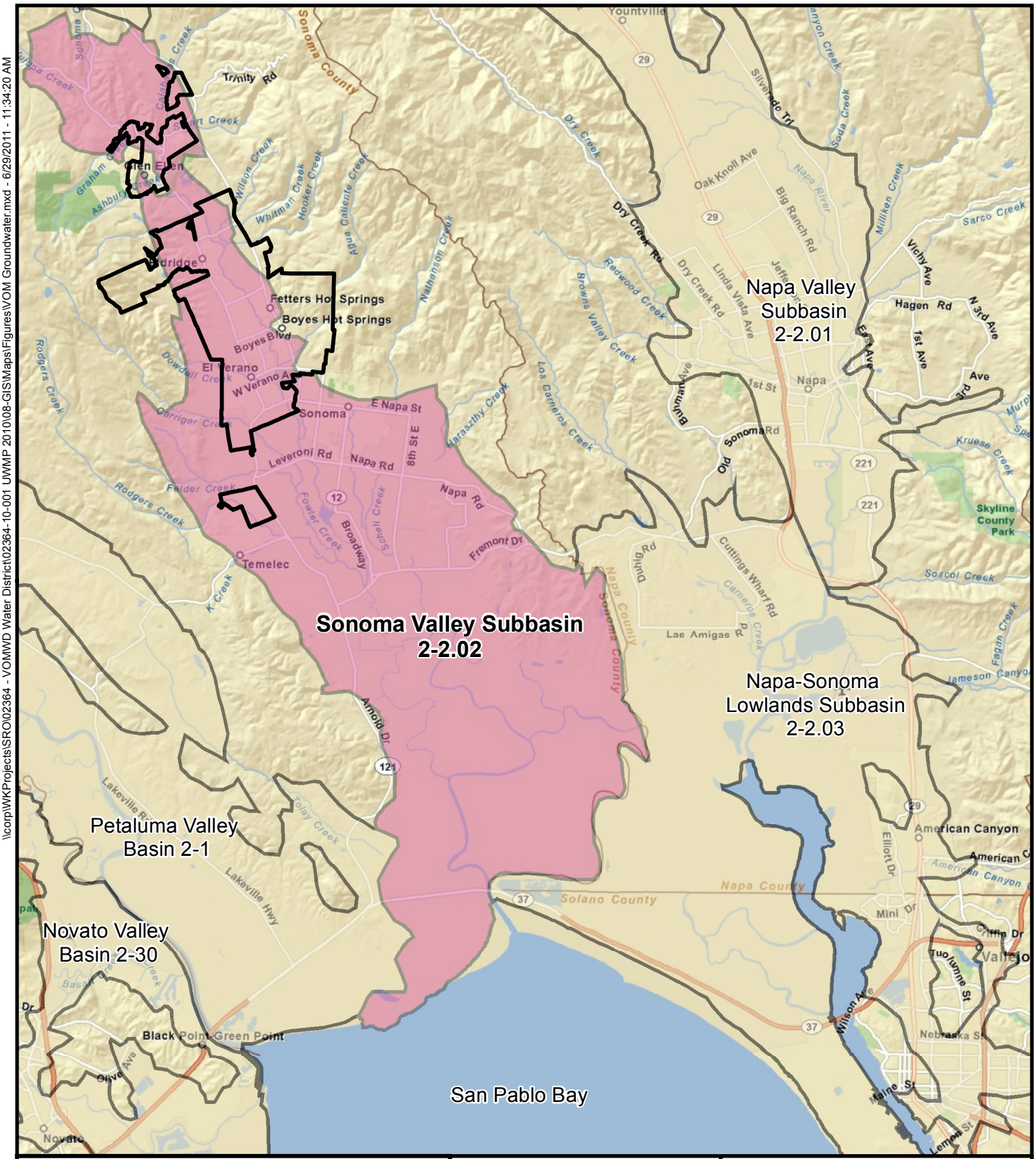

\\corp\WKProjects\SRO\02364 - VOMWD Water District\02364-10-001 UWMP 2010\08-GIS\Maps\Figures\VOM Groundwater.mxd - 6/29/2011 - 11:34:20 AM

Cartography: RMR

Legend

- Sonoma Valley Subbasin DWR Basin Number 2-2.02
- Valley of the Moon Water District Service Area/Sphere of Influence

0 1.25 2.5 Miles

1 inch = 3 miles

N

Sources: Department of Water Resources (DWR) Hydrologic Regions: ESRI, DeLorme, AND, Tele Atlas, First American

Figure 4.3
Groundwater Basin and Subbasin Map

Valley of the Moon Water District
2010 Urban Water Management Plan

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Underlying the Quaternary alluvium is the Glen Ellen Formation of late Pliocene to early Pleistocene age. The Glen Ellen Formation was deposited by alluvial fans and is composed of poorly sorted lenticular beds of clay, silt, sand, and gravel, with much of the material being derived from the Sonoma Volcanics. The Glen Ellen Formation interfingers with the Sonoma Volcanics and the underlying Huichica Formation, and is up to 900 feet thick. Permeability is generally relatively low, but water obtained from the lenses of gravel can locally be sufficient for municipal use (USGS, 2006a).

The Huichica Formation is interbedded with and partly older than the Glen Ellen Formation. The Huichica is early Pleistocene to Pliocene in age and was deposited as alluvial fans by streams that drained uplifted areas of the Sonoma Volcanics. The formation also contains a thick body of clay and silt representing possible lake or swamp deposition. There are lenses of boulders or gravel with fine material within the fine grained deposits. The Huichica's thickness exceeds 1,000 feet in parts of the valley (USGS, 2006a). Large quantities of water are not able to be pumped from the formation and are mostly developed for domestic use (Kunkel and Upson, 1960 and Luhdorff & Scalmanini, 1999).

The Miocene to Pliocene Sonoma Volcanics consist of a variable sequence of volcaniclastic tuffs, lahars, debris and mudflows, and sedimentary units interbedded with volcanic flows of andesite, basalt, and rhyolite (USGS, 2006a). The significant aquifers in the volcanics are the tuffs which include pumice beds (Kunkel and Upson, 1960). The Sonoma Volcanics are highly variable in terms of yield. The District has four wells completed in this formation that yield between 90 and 300 gpm.

Recharge occurring in the Sonoma Volcanics is mainly from surface outcroppings in the mountains that border the Sonoma Valley (USGS, 2006a). Alluvium is recharged from percolation through sediments in local creeks and surface runoff (Luhdorff & Scalmanini, 1999).

4.3.3.2 Groundwater Quality and Quantity Issues

The quality of the District's water deliveries is regulated by the California Department of Public Health Services (CDPH), which requires regular collection and testing of water samples to ensure that the quality meets federal and state regulatory standards and does not exceed MCLs. Both the District and SCWA perform water quality testing, which has consistently yielded results within the acceptable regulatory limits.

Groundwater in Sonoma Valley is generally high in iron and manganese. Iron and manganese are regulated under the Secondary Drinking Water Standards MCLs because they are an aesthetic concern rather than a health risk. These metals can cause staining of plumbing fixtures and clothing. Both iron and manganese concentrations are below the MCLs in all of the District's wells except the new Verano well (Luhdorff & Scalmanini, 1999). The District treats its groundwater from this well for iron and manganese to meet the California drinking water limits. The quality of groundwater supply sources over the next 25 years is expected to be adequate. Groundwater will continue to be treated to drinking water standards in the one well, and no impacts to water supplies due to water quality deficiencies are foreseen to occur in the next 25 years.

In 2006, the USGS completed an evaluation of the geology, water levels, water quality, surface water and groundwater interactions, and recharge areas of the Sonoma Valley Subbasin. In addition, a groundwater model was developed for the Sonoma Valley to assist in identifying problem areas within the basin (USGS, 2006a). In general, the Sonoma Valley Groundwater Subbasin appears to be limited in the amount of water it can store, given the predominately fine-grained materials and volcanics that comprise the basin. In Sonoma Valley, the USGS estimated that pumping in the basin has generally increased from approximately 6,200 acre-feet per year since the basin was last studied in 1974, to 8,400 acre-feet per year in 2000

(approximate 25 percent increase in pumping). The USGS study did not indicate whether overdraft was occurring (the condition where the long-term discharge including pumping exceeds recharge). The USGS noted that the relatively small decrease in storage between 1974 and 2000 explained the localized nature of water level declines. The USGS noted a significant increase in pumping since 2000 due to an increase in new wells likely associated with private vineyard production. Although the USGS concluded that groundwater quality is generally acceptable within the basin, there were some localized problems identified in the basin. In particular the USGS identified the possible migration of high-saline water along the southern end of the basin and localized areas of thermal waters (USGS, 2006a). SCWA, in cooperation with the SVGMP program is scheduled to be installing two nested monitoring well sets in the southern portion of the Sonoma Valley in 2011 to monitor the depth and levels of the saline waters.

Water quality issues are not anticipated to have a significant impact on water supply reliability. If applicable in the future, chemical contamination and the lowering of maximum contaminant levels (MCLs) for naturally occurring constituents can be mitigated by constructing new treatment facilities.

4.3.3.3 Adjudicated Basins

Neither the Sonoma Valley Subbasin nor the Napa-Sonoma Valley Groundwater Basin is adjudicated.

4.3.4 Sufficiency of Groundwater

DWR did not identify "critical conditions of overdraft" in the Sonoma Valley groundwater basin in Bulletin 118 – 80 (DWR, 1980), and has not evaluated overdraft conditions since that date (DWR, 2003).

The 2006 USGS report estimated through the groundwater flow modeling analysis, that between 1975 and 2000, 17,300 acre-feet of groundwater was lost from overall groundwater storage. As a result, the Sonoma Valley has been experiencing localized declining groundwater levels in some areas and potential groundwater quality problems from seawater intrusion and geothermal upwelling. Several groundwater studies have been prepared in the basin since the study and are summarized below as they apply to the District.

In the SVGMP Annual Reports, semi-annual groundwater contour maps are shown, and in the 2008 and 2009 Annual Reports, both indicate a depression area near two of the District wells, but not near the other District wells. The District's groundwater supply is subject to water supply reductions from its SCWA water supply during dry years. To ensure consistent groundwater availability, use of the Verano and Larbre wells would generally be used during periods of peak demand and when deliveries from SCWA are not available. This method would allow groundwater to recover between seasons of use.

The District is participating in the regional Groundwater Banking Feasibility Study that is looking at the feasibility of adding Russian River water via well injection into the aquifer beneath the Sonoma Valley to increase available groundwater supplies. It is not known if this is a viable alternative yet because this study is not due out until late 2011.

4.3.4.1 Groundwater Pumped (2005-2010)

The District wells supplement the SCWA purchased water. The volume of groundwater pumped by the District for the years 2005 to 2010 are shown in Table 4.2 (DWR Table 18).

The District's policy is to mostly use the groundwater during the peak demand months in the spring and summer. The current policy is to use groundwater only as necessary to meet the District's peak demands so groundwater levels can recover during the off-peak periods.

Table 4.2 (DWR Table 18)
Groundwater – Volume Pumped (AFY)

Sonoma Valley Subbasin	Metered or Unmetered	2005	2006	2007	2008	2009	2010
Groundwater pumped	Metered	371	305	414	425	532	515
Groundwater as a percent of total water supply		11%	9%	12%	13%	20%	19%

Source: Valley of the Moon Water District. Annual Water Production and Sales Report (2005-2010).

4.3.4.2 Limitations to Groundwater Pumping and Overdraft Conditions

There are no legal constraints on the District's use of its groundwater supply. The District has no groundwater pumping restrictions, or water quality issues that limit groundwater production.
There are two areas in the basin that appear to have groundwater depressions: one near the Verano and Larbre well areas (SVGMP, 2009) and one southeast of the City of Sonoma. The District's policy is to use groundwater mostly during times of drought or peak demands over the planning horizon to better manage the groundwater in these areas and allow for recovery of the aquifers in the District pumping areas. The District will continue to monitor the groundwater levels in the Verano and Larbre wells and assess the water level over time to ensure sustainable pumping practices.

The District is not pumping anywhere near the southern portion of the basin, where the bay mud and underlying alluvium may be hydraulically connected to San Pablo Bay, and where the potential for salt water intrusion appears to be (Luhdorff & Scalmanini, 1999).

4.3.5 Projected Groundwater Pumping

The District will continue to use its wells to supplement its purchased SCWA water, but will decrease the use of the wells over time and as the District implements more water conservation programs, unless there is a drought or a decrease in SCWA water supply. The following table indicates the approximate projected groundwater pumpage and a percentage of the total projected groundwater use compared to the total projected demand.

Table 4.3 (DWR Table 19)
Groundwater – Projected Groundwater Pumping (AFY)

Sonoma Valley Subbasin	2015	2020	2025	2030	2035
Projected groundwater use	470	450	327	232	100
Percent of total water supply	14%	13%	10%	7%	3%

Note: Percent of projected groundwater is based on the total projected supply of SCWA water availability and total projected groundwater demand.
Data from supply table provided by VOM to SCWA, January 2011

4.3.6 Planned Groundwater Supply Projects and Programs

Understanding some of the management issues of groundwater banking, SCWA and several agencies including the District entered into an agreement in 2010 to study the feasibility of banking in the Sonoma Valley. The agency group hired consultants who are currently reviewing the hydrogeology of the Valley to assess potential areas, such as the groundwater depression areas, that could possibly bank groundwater. The feasibility study goal is to determine locations and have an understanding of the specific ramifications,

such as water quality changes, of such a program and to provide the various participating local agencies enough information to proceed with appropriate workplans to further investigate specific locations to bank groundwater. The study is expected to be completed only after this UWMP is completed.

Another study being completed is a County-wide storm water management-groundwater recharge study by SCWA to assess the feasibility of using storm water to recharge the groundwater in some areas around the Valley. This study is in the early stages and will be completed later in 2011 or 2012.

The Sonoma County Water Agency also received Bureau of Reclamation stimulus grants to construct a 100 acre-foot recycled water storage pond near the SVCSDregional wastewater treatment plant, south of the City of Sonoma. This project includes the pond and conveyance pipeline that will expand the use of recycled water, strategically in the areas where saline water may be present, as well as the potential for offsetting some use of groundwater in areas located to the south of the District's service area. This pond is expected to begin construction in 2011. Beneficial effects to the groundwater may not be known for several years, but the project adds to the progress towards a sustainable groundwater supply for the basin.

4.4 TRANSFER OPPORTUNITIES

Water transfers between SCWA's water contractors are authorized under the Restructured Agreement. Such transfers and exchanges between the water contractors have been necessary in the past and may continue to be necessary in the future to improve water reliability. The District does not anticipate any transfers or exchanges.

Table 4.4 (DWR Table 20)
Transfer and Exchange Opportunities (AFY)

Transfer Agency	Transfer or Exchange	Short Term or Long Term	Proposed Volume
Name of Agency	--	--	0
		Total	**0**

4.5 DESALINATED WATER OPPORTUNITIES

There are currently no plans for desalination, and no desalination for future water supply is anticipated. However, the District is within approximately 15 miles of the San Pablo Bay; therefore, desalination of bay water (as is currently being pilot tested by Marin Municipal Water District) is a possibility. Brackish or impaired groundwater is also present between Petaluma and San Pablo Bay; therefore, desalination of groundwater is also a possibility. Nevertheless, no desalinated water supplies are projected for this Plan.

4.6 RECYCLED WATER OPPORTUNITIES

This section describes the wastewater characteristics, flows, and treatment facilities that are proximate to the District's service area. The UWMP Act requires the following items to be addressed for recycled water:

- Information on the recycled water supply including coordination with dischargers
- Description of the wastewater collection and treatment systems in the service area
- Quantity of treated wastewater that meets recycled water standards
- Recycled water currently being used in the service area
- Potential for recycled water use in the service area

- Actions to encourage recycled water use
- Plan for optimizing recycled water use.

The District meets the water supply needs of its customers by importing water into its service area from the Sonoma County Water Agency (SCWA), pumping local groundwater within Sonoma Valley, and implementing water conservation programs. However, in order to further supplement and enhance the District's water supply sources, the District has been in discussion with the Sonoma Valley County Sanitation District (SVCSD) to acquire recycled water in the future.

As discussed in more detail below, the District's service area is relatively distant from the SVCSD treatment plant and will require extensive pipeline construction to serve irrigation demands in the District's service area. The District recognizes that recycled water can help increase the reliability of their water supply by offsetting groundwater pumping, particularly in the southern end of Sonoma Valley. The District recognizes the benefit of expanded recycled water use to offset agricultural pumping in the southern portion of the Sonoma Valley in terms of increasing the reliability of their groundwater supplies.

Accordingly, the District will endeavor to collaborate with the SVCSD to increase recycled water use for agricultural and other purposes that results in reduced groundwater pumping. As discussed in more detail below, extension of recycled water pipelines to the District's service area is anticipated to be a later phase of a regional project and it will take time and outside funding to bring a recycled water system to the District's service area.

4.6.1 Coordination

The District has been in discussion with various agencies regarding the potential use of recycled water in the District's service area. Those agencies include the SCWA, the SVCSD and the City of Sonoma. The SVCSD participates indirectly in the North Bay Regional Water Recycling Project described below.

4.6.2 Existing Wastewater Collection, Treatment and Reuse Systems

The SVCSD provides wastewater collection, treatment, disposal and water recycling services within the District's service area and other areas in the Sonoma Valley, including the City of Sonoma (see Figure 4.4). The SVCSD reclamation facility provides a tertiary treatment for a permitted average dry weather flow capacity of 3 million gallons per day (mgd) and is capable of treating up to 16 mgd. From 2000 to 2010, the annual volume of wastewater treated by the plant ranged from approximately 3,500 (in 2007) to 4,800 (in 2006) acre-feet.

Treated wastewater is currently either discharged to the San Pablo Bay via Schell and Hudeman's Slough or is reused by dairy and vineyard operations in the southern part of the Sonoma Valley. In 2009 approximately 1,500 acre-feet of treated water was reused, thus offsetting groundwater pumping by this amount. In recent years, the SVCSD has explored the feasibility of expanding recycled water use to offset local groundwater pumping or imported Russian River water in addition to reducing or eliminating discharges to San Pablo Bay.

Table 4.5 (DWR Table 21) summarizes the volume of wastewater collected and treated to Title 22 reuse standards. Table 4.6 (DWR Table 22) summarizes the existing and planned disposal methods.

Table 4.5 (DWR Table 21)
Recycled Water – Wastewater Collection and Treatment (AFY)

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035
Wastewater collected & treated in service area	4,628	4,122	3,500	3,500	3,500	3,500	3,500
Volume that meets recycled water standard	4,628	4,122	3,500	3,500	3,500	3,500	3,500

Source: Data provided by the Sonoma Valley County Sanitation District.

Table 4.6 (DWR Table 22)
Recycled Water – Non-Recycled Wastewater Disposal (AFY)

Method of Disposal	Treatment Level	2010	2015	2020	2025	2030	2035
Slough Discharge	Tertiary	2,772	2,500	1,500	500	0	0
Agricultural Irrigation	Tertiary	1,350	1,350	1,500	2,000	2,000	2,000
Urban/Env. Enhancement	Tertiary	0	0	1,000	1,500	2,000	2,000
Total		**4,122**	**3,850**	**4,000**	**4,000**	**4,000**	**4,000**

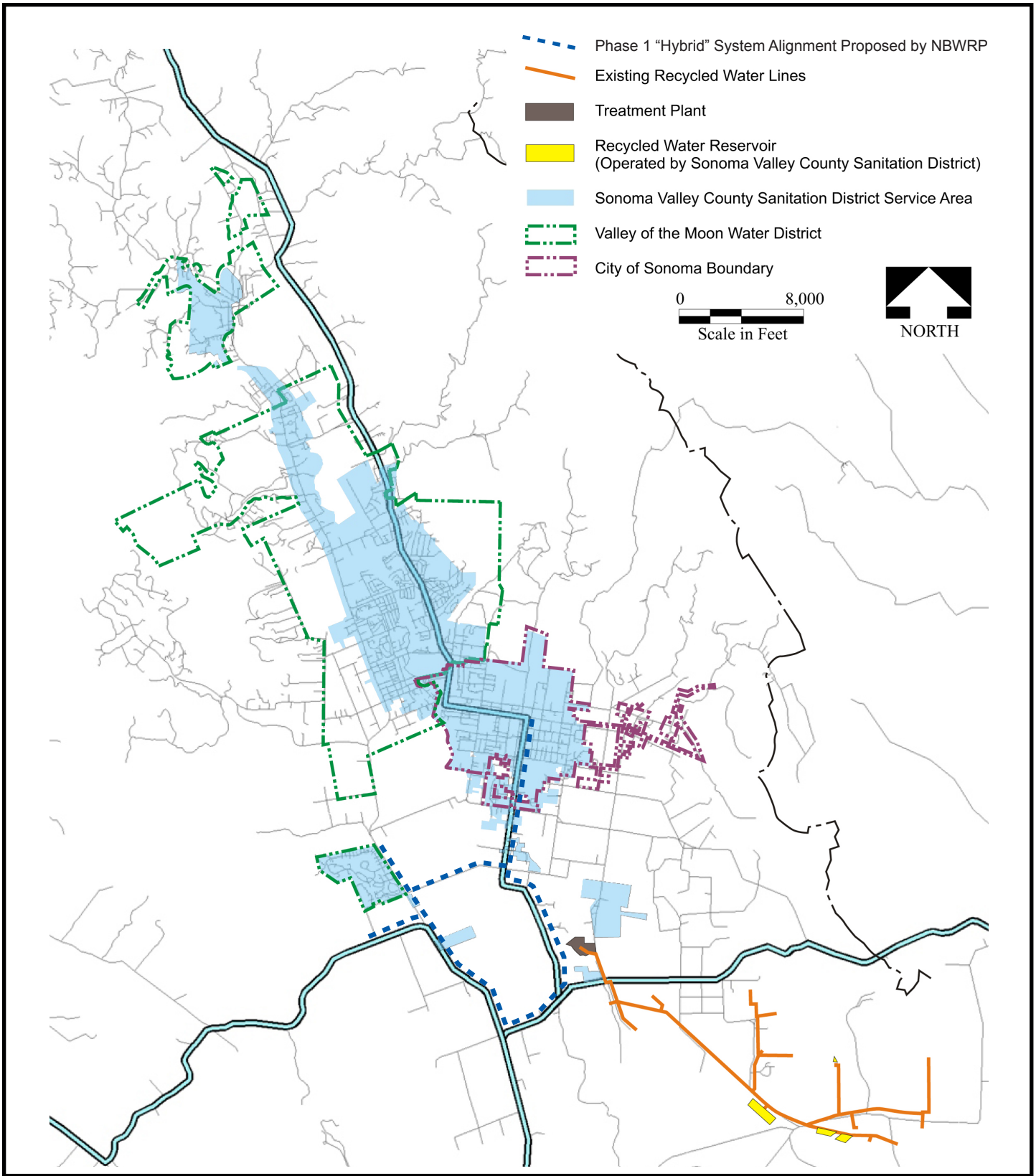
Source: Data provided by the Sonoma Valley County Sanitation District.

4.6.3 Potential and Projected Uses of Recycled Water

While there is currently no recycled water use in the District's service area, the SVCSD does have recycled water that could be made available for use by the District. However, the "backbone" infrastructure system has not been constructed thereby causing a limitation to the use of available recycled water.

Recognizing the growing need for an integrated and regional approach to water management, the SCWA partnered with SVCSD, Napa Sanitation District (Napa SD), Novato Sanitary District (Novato SD) and Las Gallinas Valley Sanitary District (LGVSD) to plan for expanded use of recycled water. The North Bay Water Recycling Program (NBWRP) builds on existing project planning and leverages inter-agency cooperation to address common needs related to reliable water supplies and enhanced environmental restoration and secure project funding. To date, NBWRP has developed technical planning documents, certified a program EIR/EIS and secured $7.3 million in grant funding towards project planning, design and construction. Each of the NBWRP member agencies had conducted previous planning studies and as part of developing the program EIR/EIS, NBWRP reviewed these documents and available land use data to develop regional recycled water service areas. The Sonoma Valley area includes area studied in the 2006 Sonoma Valley Recycled Water Project EIR and has been expanded to include areas south and north of the original study area including:

- **Sonoma Valley Recycled Water Project Area** – SVCSD is developing the Sonoma Valley Recycled Water Project (SVRWP), which identified about 1,015 acres of dairy/pasture land, 234 acres of urban landscaping, 2 acres of irrigated farm land, and 6,249 acres of vineyards, for a total of about 7,500 acres which could be converted to recycled water.
- **Southern Sonoma Valley** – The area south of the City of Sonoma is dedicated predominantly to vineyard uses and is close to the SVCSD wastewater treatment plant (WWTP). The Southern Sonoma Valley reuse area includes an additional 55 acres of dairy/pasture land, 48 acres of urban landscaping, and 4,005 acres of vineyards, for a total area of 4,108 acres. As illustrated in Figure 4.4 it generally extends south of the Sonoma Valley Recycled Water Project area and provides opportunity for early, phased implementation.



Source: SCWA, Draft Sonoma Valley Recycled Water Feasibility Study, January 2005

Figure 4.4
Sonoma Valley County Sanitation District Facilities Map

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2010 Urban Water Management Plan

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- **Central Sonoma Valley** – The Central Sonoma Valley reuse area is located north of the proposed Sonoma Valley Recycled Water Project, and includes additional irrigated areas in the Valley. It includes an additional 51 acres of urban landscaping, 258 acres of irrigated farm land, and 2,929 acres of vineyards, for a total area of 3,237 acres. Because of its distance from SVCAD's facilities, extension of recycled water into this area would occur late in program implementation.

NBWRP's EIR/EIS considered a No Project Alternative, a No Action Alternative, which reflects the individual agency projects that are likely to move forward even without support from the NBWRP, and three Action Alternatives which would expand regional recycled water potential. The EIR/EIS also developed a Phase 1 Implementation Plan which includes a set of projects, common to all of the NBWRP alternatives, and which have attracted design-level funding commitments from the US Bureau of Reclamation.

Each project phase is described below.

- **No Action Alternative and Phase 1 Implementation Plan:** The SVCSD completed an EIR in 2006 for the Sonoma Valley Recycled Water Project (SVRWP), located in southern Sonoma Valley, including the City of Sonoma and unincorporated portions of the county. The SVRWP, as described in the EIR, involved extending the recycled water pipelines from the SVCSD WWTP to deliver recycled water to the increased customer base described above. Although the SVRWP EIR was certified, SVCSD has elected to implement only one of the proposed pipeline alignments. The Phase 1 Implementation Plan includes specific elements of the SVRWP, including construction of 5.2 miles of pipeline, additional storage at the SVCSD WWTP and construction of additional pumping capacity for distribution.

  The SVCSD and SCWA have developed proposed hybrid pipeline alignments that could serve to offset groundwater use (making the groundwater available for urban use) or directly offset urban uses in the City of Sonoma. The proposed hybrid facilities that could be constructed the Phase 1 Implementation Plan are also illustrated on Figure 4.4. Construction of this system could occur within the planning period for this UWMP, subjected to continued successful contribution for federal grants.

- **Basic System**: The Basic System would be the SVRWP and potentially go into the District's service area. Construction of this system could occur within the planning period for this UWMP, subject to continued successful contribution by federal grants.

- **Partially Connected System:** The Partially Connected System involves development of a subregional recycled water system, taking advantage of increased storage capacity and additional pipelines under Alternative 1 to distribute recycled water more extensively throughout the project area. The partially connected system could again allow for expansion of the Sonoma Valley Recycled Water Project and extension into the identified South Sonoma Valley Service Area, which is outside of the District's service area. Construction of this system could occur within the planning period for this UWMP, subject to continued successful contribution from state and federal grants.

- **Regional System**: The Regional System connects all four WWTPs in the project area and maximizes water reuse by allowing recycled water from any WWTP to be delivered to any area that needs recycled water. Since the majority of the demand for recycled water lies in the area near Sonoma and Napa, the regional interconnection would allow the other WWTPs to help satisfy the demand in this area. Specifically combined flow from Novato SD and LGVSD would serve the Sears Point Area and would be extended to the Southern Sonoma Valley. Most of this flow is anticipated to originate from Novato SD. SVCSD would extend service north of the Sonoma Valley Recycled Water

Service Area to the Central Sonoma Valley Service Area. Construction of this system could occur within the planning period for this UWMP, subjected to continued successful contribution from state and federal grants.

Table 4.7 (DWR Table 23) identifies the various potential future recycled water users by type.

Table 4.7 (DWR Table 23)
Recycled Water – Potential Future Use (AFY)

User Type	Description	Feasibility[a]	2015	2020	2025	2030	2035
Agricultural irrigation	Tertiary Treatment						
Existing		Technical & Economic	1,350	1,350	1,350	1,350	1,350
NBWRP Phase 1		Technical Only	-	848	848	848	848
NBWRP Basic		Technical Only	-	-	-	1,790	1,790
NBWPR Partially Connected		Technial Only	-	-	-	-	-
NBWPR Regional		Technical Only	-	-	-	-	-
Landscape irrigation[b]	Tertiary Treatment						
NBWRP Phase 1		Technical Only	-	-	26	26	26
NBWRP Basic		Technical Only	-	-	-		55
NBWPR Partially Connected		Technial Only	-	-	-	-	-
NBWPR Regional		Technical Only	-	-	-	-	-
Commercial irrigation[c]			-	-	-	-	-
Golf course irrigation			-	-	-	-	-
Wildlife habitat			-	-	-	-	-
Wetlands[d]		Technical	-	-	-	-	-
Industrial reuse			-	-	-	-	-
Groundwater recharge			-	-	-	-	-
Seawater barrier			-	-	-	-	-
Getothermal/Energy			-	-	-	-	-
Indirect potable reuse			-	-	-	-	-
Other (type of use)			-	-	-	-	-
		Total	**1,350**	**2,198**	**2,224**	**4,014**	**4,069**

[a] Technical and economic feasibility

[b] Includes parks, schools, cemeteries, churches, residential, or other public facilities

[c] Includes commercial building use such as landscaping, toilets, HVAC, etc. and commercial uses (car washes, laundries, nurseries, etc)

[d] Use could be as much as 3000 AFY combined from SCVD and Napa SD treatment plants. Varies by hydrologic year and would reduce discharge

Note: Demand data brought forward from NBWRA draft EIR/EIS May 2009 Section 2 Project Description. Estimated use allocated based on total acreage for each use. Urban use can be in City of Sonoma or District service area. District estimates up to 25 AFY for its service area.

4.6.3.1 Technical and Economic Feasibility of Projected Use

The projects evaluated in the NBWRP EIR/EIS are considered technically feasible. The NBWRP partners have conducted technical studies and adopted a programmatic environmental document, paving the way for project implementation. The NBRWP has also secured a $7.3 million in grants towards project design and construction. The grant will be shared amongst the participating entities and is generally considered sufficient to cover project design activities but not sufficient to fully fund construction.

For example, the hybrid alternatives currently being developed by the SCWA and SVCSD range in cost from approximately $2 million to approximately $5 million. The hybrid alternative that delivers recycled water to the City of Sonoma's service area carries a delivered water cost of over $9,181 acre/foot. The District's service area is further from SVCSD's facilities and would be even more expensive to serve. [1] This cost for recycled water highlights the fact that the economic feasibility of these projects is highly dependent on receiving grant funding for implementation.

4.6.4 Comparison of Previously Projected Use and Actual Use

There is a slight difference in the projected use in comparison to the actual use by the SVCSD. This difference is likely a result of the fact that SVCSD did not implement the SVRWP independently but rather has worked to build support through a regional coalition and attract grants to its proposed program. These projections are for the entire SVCSD service area. As noted above, recycled water use within the District's service area will likely occur very late in the overall NBWRP effort because of the distance between the SVCSD facilities and the District's service area.

Table 4.8 (DWR Table 24)
Recycled water Use by SVCSD — 2005 UWMP Use Projection Compared to 2010 Actual (AFY)

User Type	2010 Actual Use	2005 Projection for 2010
Agricultural irrigation	1,350	1,500
Landscape irrigation	0	350
Commercial irrigation	0	0
Golf course irrigation	0	0
Wildlife habitat	0	0
Wetlands	0	0
Industrial reuse	0	0
Groundwater recharge	0	0
Seawater barrier	0	0
Getothermal/Energy	0	0
Indirect potable reuse	0	0
Other (type of use)	0	0
Total	**1,350**	**1,850**

4.6.5 Promoting Recycled Water Use

As noted above, the SVCSD and SCWA have recently received funding from the Bureau of Reclamation, U.S. Department of Interior American Recovery and Reinvestment Act of 2009 through the Bureau of Reclamation, Title XVI Program. These funds will be used for the detailed design of the Phase 1 Implementation project described above and may also provide some construction funding. In addition,

[1] Sonoma Valley Recycled Water Project Route Analysis (600 AF option), August 2009

SVCSD has applied for Proposition 84 funding from DWR through the Bay Area Integrated Regional Water Management Plan. If implemented, this project could provide recycled water to offset groundwater pumping and/or to provide direct potable offsets in the City of Sonoma.

Currently there are no financial or other incentives to the District's customers to encourage use of recycled water as recycled water is still not available within the District's service area. As discussed above, the District is working with the local agencies to deploy recycled water within Sonoma Valley Basin and ultimately to bring it to the District's service area by 2035 at which time appropriate financial incentives would be considered to encourage recycled water use.

Table 4.9 (DWR Table 25)
Methods to Encourage Recycled Water Use (AFY)

Actions	Projected Results					
	2010	2015	2020	2025	2030	2035
Financial Incentives						25
Total	0	0	0	0	0	25

4.7 WHOLESALE WATER SUPPLIER(S) AND WATER SUPPLY SUMMARY

The District has one existing wholesale source for potable water and one proposed wholesale source for recycled water. Table 4.10 (DWR Table 17) shows the existing and future supply from wholesalers.

Table 4.10 (DWR Table 17)
Wholesale Supplies – Existing and Planned Sources of Water (AFY)

Wholesale Sources	Contracted Volume	2015	2020	2025	2030	2035
Sonoma County Water Agency [a]	3200 (max.)	2,995	2,994	3,099	3,192	3,308
SVCSD	--	0	0	0	0	25

[a] By year 2035, the District will need to acquire additional water supply from the SCWA.

The supply amount is based on the District's water demands described in Section 3. The SCWA and its water contractors are tracking Russian River system water deliveries and conducting on-going short and long-range capital project planning to identify capital improvement needs, financing and timing to address system deficiencies, as they become needed.

The District will need to receive an increased water supply under its contract with the SCWA by 2035. The District and other water contractors anticipate the need for additional water in future years and the SCWA will be working on a pending petition to increase the amount it can withdraw from the Russian River. The District will work towards amending the Restructured Agreement since its demands are projected to exceed the entitlement limits under the terms of the agreement.

The District has one permitted leased supply well (Larbre Well). The lease will expire in 2014. It is assumed that the lease will be renewed, as it has been in the past. A description of this supply well is included in Section 4.3.

Table 4.11 (DWR Table 16)
Water Supplies – Current and Projected (AFY)

Water Supply Sources							
Water Purchased From:	Wholesaler Supplied Volume (Y/N)	2010	2015	2020	2025	2030	2035
Sonoma County Water Agency [a]	yes	3,319	2,995	2,994	3,099	3,192	3,308
SVCSD (Recycled Water)	no	--	--	--	--	--	25
Supplier-produced groundwater		515	470	450	327	232	100
Transfers in		--	--	--	--	--	--
Exchanges In		--	--	--	--	--	--
Recycled Water (see SVCSD supplier above)		--	--	--	--	--	--
Desalinated Water		--	--	--	--	--	--
Total		**3,834**	**3,465**	**3,444**	**3,426**	**3,424**	**3,433**

[a] SCWA entitlement limit is 3,200 AFA unless capacity is available from the system.

4.8 FUTURE WATER SUPPLY PROJECTS

The District's water supply projects and programs include:

- SDC Conjunctive Use Project. This project is a conjunctive use project with the District, the City of Sonoma and the Sonoma Developmental Center (SDC). This project would provide increased reliability by capturing and making beneficial use of off-peak water (wintertime water) available in the Russian River and off-peak capacity available in SCWA's water supply and transmission system. The project would increase the water supply to the District during critical hot spells, increases flows available in the south end of the Sonoma Aqueduct and reduces competition among SCWA's water contractors for summertime deliveries from the Russian River. The project would require an agreement between the City of Sonoma, SDC and the District.
- Groundwater Banking. The District is working with the SCWA, the City of Sonoma and other interested participants in a groundwater banking pilot testing project. Groundwater banking may increase the sustainable yield of existing wells, but at the time of this report, the feasibility of groundwater banking is yet not known.
- Recycled Water. The District is in preliminary discussions with the SCWA, SVCSD and the City of Sonoma regarding the delivery and use of recycled water in the District, the City of Sonoma and the surrounding county area served by the SVCSD.
- SCWA Russian River Diversion Rights Increase. The District will need an increase to its water supply entitlement limit, as provided for under the Restructured Agreement, by year 2035. SCWA will be working towards obtaining increased Russian River diversion rights from the State as well as the needed improvements to increase the capacity of the transmission and delivery system to implement this water supply increase.

4.8.1 Amount of Supply Increase

Future water supply projects are listed in Table 4.12 (DWR Table 26). The District's portion of the water supply for the future SCWA Russian River Diversion Rights Increase is projected to be 108 acre-feet per year.

Table 4.12 (DWR Table 26)
Future Water Supply Projects (AFY)

Project Name	Projected Start Date	Projected Completion Date	Potential Project Constraints	Normal Year Supply	Single-Dry Year Supply	Multiple-Dry Year		
						Year 1	Year 2	Year 3
SDC Conjunctive Use	2011	2013	Agreement	--	--	--	--	--
Groundwater Banking	2011	2020	Feasibility	TBD	TBD	TBD	TBD	TBD
Recycled Water	2011	2035	Feasibility	25	25	25	25	25
SCWA Russian River Diversion Rights Increase [a]	2015	2035	Environ.	108	90	108	108	108
		Total	**0**	**133**	**350**	**133**	**133**	**133**

This table represents 2035 projected water supply needs.

[a] Water supply estimates include only the District's share of the project, not the total project for SCWA.

SECTION 5
WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING

This section compares the water demand information developed in Section 3 and the water supply information developed in Section 4. Comparisons are provided under California Department of Water Resources' (DWR's) required range of hydrologic conditions including the normal, single-dry, and multiple-dry year conditions. This section also describes the District's water shortage contingency and drought planning as required by Water Code Section 10632.

5.1 SUMMARY OF FACTORS AFFECTING SUPPLY

The District's water supply is predominantly water purchased from the Sonoma County Water Agency (SCWA). The District also has local groundwater well supply and in the future proposes to use recycled water from the Sonoma Valley County Sanitation District (SVCSD). The factors affecting recycled water are described in detail in Section 4.6 and summarized in Table 5.1 (DWR Table 29). In a normal water year, approximately 85 percent of the District's water supply is water purchased from the SCWA.

Table 5.1 (DWR Table 29)
Factors Resulting in Inconsistency of Supply

Water Supply Sources	Sonoma County Water Agency	Groundwater Wells	Recycled Water
Specific Sources Name (if any)	Russian River surface water	Sonoma Valley Basin groundwater	Sonoma Valley County Sanitation District
Limitation Quantification	3,200 acre-feet per year 8.5 million gallons per day	470 acre-feet per year	25 acre-feet per year
Legal	Controlled by 4 SWRCB permits and subject to permit constraints including reductions in water supply during water shortage years; District will need to increase entitlement limit by 2035 to meet demands	None	None
Environmental	Biological Opinion calls for reduction of impacts to salmonids and results in minimum flow requirements during normal and dry years	None	None
Water Quality	None	None; some wells have pretreatment for iron and manganese	None
Climatic	Water supply curtailments during drought conditions	Groundwater is generally used to further supplement Russian River supply during drought conditions	Recycled water is less likely to be impacted by hydrologic and climatic conditions
Additional Information			Feasibility and cost of the infrastructure is the main challenge to implementing this program

5.2 HYDROLOGIC RELIABILITY

The reliability of the District's water sources is summarized in Tables 5.2 (DWR Table 27) and Table 5.3 (DWR Table 28) and supported by the data and analysis presented in Chapter 4. The District's water year

data and reliability analysis relies upon the information and river system modeling from the SCWA (refer to SCWA 2010 UWMP at website noted in Section 4).

Table 5.2 (DWR Table 27)

Basis of Water Year Data

Water Year Type	Base Year(s)
Average Water Year	1962
Single-Dry Water Year	1977
Multiple-Dry Water Years	1988-1991

Source: Sonoma County Water Agency

Table 5.3 (DWR Table 28)

Supply Reliability – Historic Conditions (AFY) [a]

Water Supply Sources	Avg./Normal Water Year	Single-Dry Water Year	Multiple-Dry Water Years			
			Year 1	Year 2	Year 3	Year 4
Sonoma County Water Agency [b]	3,308	2,779	3,308	3,308	3,308	3,308
Local Groundwater [c]	100	100	100	100	100	100
SVCSD (Recycled Water)	25	25	25	25	25	25
Total	3,433	2,904	3,433	3,433	3,433	3,433
Percent of Avg/Normal Year	100%	85%	100%	100%	100%	100%

[a] 2015 is used as basis

[b] Reliability for SCWA supply is 84% supply for single-dry year; 100% for all other water years

[c] Reliability for groundwater and recycled water is 100% for all water years

5.3 LEGAL & ENVIRONMENTAL CONSTRAINTS

There are factors that cause or have the potential to cause inconsistent supply to meet demands. These factors that affect the reliability of the District's water supply are legal, environmental, water quality or climatic issues and are described in this section.

5.3.1 SCWA Water Supply Agreement

The District is one of eight water contractors under contract with the SCWA, known as the *Restructured Agreement for Water Supply* ("Restructured Agreement"). Under the contract, the SCWA is obligated to deliver up to 8.5 million gallons per day (mgd) during any month and a maximum of 3,200 acre-feet of water during a fiscal year. The term of the agreement is through 2037 and can be extended by amendment.

The Restructured Agreement was executed in 2006 and generally provides for the finance, construction, and operation of existing and new diversion facilities, transmission lines, storage tanks, booster pumps, conventional wells, and appurtenant facilities. The Restructured Agreement provides the contractual relationship between SCWA and its eight contractors, including the District, and includes specific maximum amounts of water that SCWA is obligated to supply to its water contractors. Maximum water allocations for each of SCWA's water contractors and other customers such as Marin Municipal Water District set forth within the Restructured Agreement were premised on SCWA's diversion/rediversion water rights being increased to 101,000 acre-feet per year and on the construction of the new facilities authorized by the Restructured Agreement.

During periods of shortage, Section 3.5 of the Restructured Agreement provides a method for allocating water among the various water contractors and customers of the SCWA water supply. On April 18, 2006,

the SCWA's Board of Directors adopted Resolution No. 06-0342 which approved a methodology for allocating water in the event of a water supply shortage or in the event of a temporary impairment of the capacity of the SCWA's transmission system. It is anticipated that the approved methodology will be modified and updated in 2011-2012 to address changes that have occurred over the last five years. These changes include changes in customer demands, local supply and recycled water.

5.3.1.1 Water Rights

Four State Water Resources Control Board (SWRCB) permits currently authorize SCWA to store up to 122,500 acre-feet per year of water in Lake Mendocino and up to 245,000 acre-feet per year of water in Lake Sonoma, and to divert and redivert 180 cubic feet per second (cfs) of water from the Russian River at SCWA's Wohler and Mirabel facilities, up to 75,000 acre-feet per year. SCWA has a pending application with the SWRCB for increasing SCWA's Russian River diversion limit from 75,000 to 101,000 acre-feet. SCWA plans to modify that petition to match the amount of water that would be needed in future years (2025 to 2035) for the water contractors including the District.

In September 2008, a final Biological Opinion (BO) was released by the National Marine Fisheries Service (NMFS) and issued to the SCWA, the U.S. Army Corps of Engineers, the California Department of Fish and Game, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District. The BO is a federal mandate on Russian River operations of the receiving agencies listed above that affect salmonids on state and federal endangered species lists (steelhead, coho and Chinook). This affects the SCWA's water supply operations and subsequent delivery to its water contractors, including the District.

The BO calls for the elimination or reduction of impacts to salmonids due to water supply and flood control activities in the Russian River watershed through measures deemed "reasonable and prudent alternatives," including:

- Extensive monitoring of both habitat and fish in Dry Creek, the estuary and the Russian River;
- Eliminating impediments to fish migration and improving habitat on several streams;
- Restoring up to six miles of habitat in Dry Creek and studying a bypass project;
- Requesting the SWRCB to reduce summertime flows in the Russian River;
- Creating a freshwater lagoon in the estuary at the mouth of the Russian River during the summer months.

NMFS concluded that lower flows in Dry Creek and Russian River create a better environment for juvenile salmon and steelhead and the BO identified habitat restoration projects in Dry Creek to reduce water velocities in the stream/river. Current minimum summer flows are based on weather conditions, and range from 125 cfs (during a normal year, as measured at Hacienda Bridge in Guerneville) to 85 cfs (as measured during a dry year). Under the terms of the BO, minimum flows would be dropped to 70 cfs with an additional 15 cfs to maintain system flexibility for a total flow of 85 cfs. For a more complete and comprehensive discussion of minimum flow requirements, refer to the SCWA's Urban Water Management Plan found at the website link noted in Section 4. The BO acknowledged a need for balance and flexibility and noted that SCWA may find alternative minimum flow requirements that meet the goals of restoring functional salmonid-rearing habitat while promoting water conservation and limited adverse effects on other in-stream resources.

5.3.1.2 Entitlements

Water entitlements are set forth in terms of average day peak month demand. The District's entitlement limit is 8.5 mgd and an annual entitlement limit of 3,200 acre-feet. Provided the capacity is available, the Restructured Agreement permits the District to take delivery of water in excess of its entitlement during a given month provided specific conditions as specified in the agreement are met.

5.4 WATER QUALITY CONSTRAINTS

The quality of the District's water deliveries is regulated by the California Department of Health Services (DHS), which requires regular collection and testing of water samples to ensure that the quality meets regulatory standards and does not exceed maximum contaminant levels (MCLs). The District and the SCWA perform water quality testing, which has consistently yielded results within the acceptable regulatory limits (Dyett & Bhatia, 2000).

The quality of existing surface water and groundwater sources over the next 25 years is expected to be satisfactory given current treatment practices. Surface and groundwater water will continue to be treated to drinking water standards, and no surface water, groundwater, or recycled water quality deficiencies are foreseen to occur in the next 25 years. Table 5.4 (DWR Table 30) summarizes the current and projected water supply changes due to water quality.

Table 5.4 (DWR Table 30)
Water Quality – Current and Projected Water Supply Impacts

Water source	Description of Condition	2010	2015	2020	2025	2030	2035
SCWA Water Supply	No impacts	--	--	--	--	--	--
Groundwater Wells	No impacts	--	--	--	--	--	--
Recycled Water	No impacts	--	--	--	--	--	--

5.5 SUPPLY AND DEMAND COMPARISONS

Table 5.5 (DWR Table 31) compares the projected normal year water supply available to the District under a current multiple-dry water year condition to the supply and demand from 2015 to 2035, in five-year increments.

Table 5.5 (DWR Table 31)
Supply Reliability – Current Water Sources (AFY) [a]

Water Supply Sources	Average/Normal Water Year Supply	Multiple-Dry Water Year Supply [b]			
		Year 1	Year 2	Year 3	Year 4
Sonoma County Water Agency [a]	2,995	2,995	2,995	2,995	2,995
Groundwater (VOWMD Wells)	470	470	470	470	470
SVCSD (Recycled Water)	0	0	0	0	0
Total Supply	3,465	3,465	3,465	3,465	3,465
Percent of Normal Year		100%	100%	100%	100%

[a] Basis Year is 2015

[b] See Table 4.11

Table 5.6 (DWR Table 32)
Supply and Demand Comparison – Normal Year (AFY)

	2015	2020	2025	2030	2035
Supply (from Table 4.11):					
Sonoma County Water Agency	2,995	2,994	3,099	3,192	3,308
Groundwater (VOMWD Wells)	470	450	327	232	100
Recycled Water	0	0	0	0	25
Supply Totals	3,465	3,444	3,426	3,424	3,433
Demand Totals (from Table 3.14)	3,465	3,444	3,427	3,424	3,433
Difference (supply minus demand)	0	0	-1	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%

Table 5.7 (DWR Table 33)
Supply and Demand Comparison – Single Dry Year (AFY)

	2015	2020	2025	2030	2035
SCWA Reliability (% of Normal) [a]	79%	80%	82%	79%	81%
Groundwater Reliability (% of Normal)	100%	100%	100%	100%	100%
Recycled Water Reliability (% of Normal)	100%	100%	100%	100%	100%
Supply Totals [b]	2,836	2,845	2,868	2,754	2,804
Demand Totals	3,465	3,444	3,427	3,424	3,433
Difference (supply minus demand)	-629	-599	-559	-670	-629
Difference as % of Supply	-22%	-21%	-19%	-24%	-22%
Difference as % of Demand	-18%	-17%	-16%	-20%	-18%

[a] Single-dry year reliability based on SCWA reliability analysis (see SCWA 2010 UWMP)

[b] Supply Total equals relaibility times source supply volume from Table 5.6

Table 5.8 (DWR Table 34)
Projected Supply & Demand Comparison during Multiple-Dry Year Events (AFY)

		2015	2020	2025	2030	2035
Multiple-Dry Year, First Year Supply	Supply Totals	3,465	3,444	3,426	3,424	3,433
	Demand Totals	3,465	3,444	3,427	3,424	3,433
	Difference (supply minus demand)	0	0	-1	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple-Dry Year, Second Year Supply	Supply Totals	3,465	3,444	3,426	3,424	3,433
	Demand Totals	3,465	3,444	3,427	3,424	3,433
	Difference (supply minus demand)	0	0	-1	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple-Dry Year, Third Year Supply	Supply Totals	3,465	3,444	3,426	3,424	3,433
	Demand Totals	3,465	3,444	3,427	3,424	3,433
	Difference (supply minus demand)	0	0	-1	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple-Dry Year, Fourth Year Supply	Supply Totals	3,465	3,444	3,426	3,424	3,433
	Demand Totals	3,465	3,444	3,427	3,424	3,433
	Difference (supply minus demand)	0	0	-1	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%

5.6 SUMMARY OF SUPPLY AND DEMAND ANALYSIS

The District's combined projected water supplies are sufficient to meet projected demands during normal and multiple-year conditions. During a severe drought condition, under the single-dry year condition, the District will not have adequate supplies and will need to impose mandatory water conservation. The District's water customers have been successful in reducing its water demands during water shortages, such as had occurred in 2009 when the District's water deliveries were reduced significantly. Also, the District can produce more groundwater on a short-term basis during peak summer months to supplement the SCWA supply.

The District's projected water supply portfolio is highly stable because it relies largely on current contracted and permitted water supply from the SCWA and also has local groundwater wells that can further supplement the SCWA supply, particularly during drought conditions.

By 2035, the SCWA will need to "perfect" its Russian River water supply because the combined water demands from its water contractors and water customers will exceed the current Russian River diversion limit. The District has requested an increase to its entitlement limit under the Restructured Agreement from 3,200 acre-feet per year to at least 3,308 acre-feet per year.

5.7 WATER SHORTAGE CONTINGENCY AND DROUGHT PLANNING

This section provides information required by Water Code Section 10632. The District adopted a Water Waste Prohibition in 2000 through its Ordinance No. 1007, which is included in Appendix D.1. The District adopted a Water Shortage Contingency Analysis with its 2005 UWMP, which is summarized in this section.

5.7.1 Actions in Response to Water Supply Shortages (Water Code 10632(a))

Water Code Section 10632(a) requires a description of the actions to be undertaken by the urban water supplier in response to water supply shortages of up to 50 percent. This section also requires the water supplier to outline the specific water supply conditions that are applicable at each stage of action. The District has the authority to declare a water shortage emergency under Section 375 and 10632 of the Water Code and has developed a model resolution to exercise this authority, which is included in Appendix D. Emergencies are declared in three stages, with specific reduction methods used for each stage. Table 5.9 (DWR Table 35) summarizes the consumption reduction methods that the District has the authority to use.

Table 5.9 (DWR Table 35)
Water Shortage Contingency – Rationing Stages to Address Water Supply Shortages

Stage No.	Water Supply Conditions	% Shortage
All	Prohibition against washing hard surfaced areas except as necessary to protect public health and safety	Any
	Escape of water through breaks or leaks within customers plumbing	
	Irrigation which allows excessive runoff or unreasonable overspray	
	Washing vehicles and machinery with a hose not equipped with a shutoff nozzle	
	Water for non-recycling decorative fountains	
	Water for single pass evaporative cooling system for air conditioners	
	New non-recirculating conveyor car washes	
	Water for new non-recirculating industrial clothes wash systems	
Stage 1 Voluntary	All Prohibitions	15%
	Minimization of non-essential uses	
	Water-on-request restaurant program	
	Use of garden or utility hose without shutoff nozzle	
Stage 2 Mandatory	All Mandatory and Stage 1 Actions	25%
	Irrigation limited to hours between 8 pm and 6 am	
	Prohibition against operating ornamental fountains	
	Prohibition against filling new swimming pools	
	Washing patios, sidewalks and other hard surfaces prohibited	
	Single Family allotment of 163 gpd + 4,500 gallons per month for irrigation	
	Multi-family allotment of 163 gpd + moderate landscape allotment based on Eto and area	
	CII allotments of 85% of past 12 month use	
	Irrigation account allotment of 80% of historic Eto demand	
	Hospital allotments of 95% of past 12 month use	
Stage 3 Mandatory	All Mandatory, Stage 1 & Stage 2 Actions	50%
	Prohibition against landscape installation for new construction	
	New construction must offset demand by two times within the existing community	
	Prohibition against filling or topping off swimming pools	
	Single Family allotment of 128 gpd + 1,000 gallons per month for irrigation	
	Multi-family allotment of 128 gpd + minimal landscape allotment based on Eto and area	
	CII allotments of 75% of past 12 month use	
	Irrigation account allotment of 25% of historic Eto demand when no restrictions were in place	
	Hospital allotments of 85% of past 12 month use when no restrictions were in place	

5.7.2 Minimum Water Supply During the Next Four Years (Water Code 10632(b))

The minimum water supply available for the next four years during a multiple year drought is shown in Table 5.5 (DWR Table 31). Because the District has based its planning on the SCWA's current water rights and because these current water rights are more restrictive than any hydrologic condition, including the multiple-dry year condition, this minimum water supply analysis is identical to the normal water year analysis.

5.7.3 Catastrophic Supply Interruption Plan (Water Code 10632(c))

In accordance with the Emergency Services Act, the District has developed an Emergency Operation Plan (EOP). This EOP guides response to unpredicted catastrophic events that might impact water delivery including regional power outages, earthquakes, or other disasters. The EOP outlines standard operating procedures for all levels of emergency, from minor accidents to major disasters. The EOP has been coordinated with the SCWA and neighboring water purveyors. Table 5.10 provides a summary of the actions included in the EOP for specific catastrophic effects.

Table 5.10

Preparation Actions for Catastrophes

Possible Catastrophe	Summary of Actions
Earthquake	Shut-off isolation valves and use of spare piping for ruptured mains
	Storage supplies for service interruption
	Portable and emergency generators available for District facilities
	Procedures for assessing water quality, notifying public and disinfecting system
Flooding	Portable and emergency generators available for District facilities
	Storage supplies for service interruption
	Procedures for assessing water quality, notifying public and disinfecting system
Toxic Spills (interrupts Agency Supply)	Use of local groundwater
	Procedures for assessing water quality, notifying public and disinfecting system
Fire	Storage supplies for fire flows
	Mutual aid plans and responders identified
	Portable and emergency generators available for District facilities
Power outage or grid failure	Portable and emergency generators available for District facilities
Severe Winter Storms	Portable and emergency generators available for District facilities
Hot Weather	Portable and emergency generators available for District facilities

5.7.4 Prohibitions, Penalties, and Consumption Reduction (Water Code 10632(d)-(f))

Ordinance 1007 specifies permanent prohibited water uses. The District's Urban Water Shortage Contingency Plan includes temporary prohibitions that are used in various stages of the water shortage emergencies. These are outlined in Table 5.11 (DWR Table 36).

Table 5.11 (DWR Table 36)
Water Shortage Contingency – Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Using potable water for street washing	Permanent Prohibition
Escape of water through breaks/leaks in customer plumbing	Permanent Prohibition
Excessive Irrigation Runoff of Overspray	Permanent Prohibition
Washing vehicles and machinery with a hose without a shutoff nozzle	Permanent Prohibition
Non recycled water fountains	Permanent Prohibition
New single pass evaporative cooling systems	Permanent Prohibition
New non-recirculating car washes	Permanent Prohibition
New non-recirculating industrial clothes wash systems	Permanent Prohibition
Service of water in restaurants except upon request	Stage 1
Use of any hose without a shutoff nozzle	Stage 1
Irrigation between 6 am 8 pm	Stage 2
Operating ornamental fountains	Stage 2
Filling new swimming pools	Stage 2
Washing sidewalks and patios	Stage 2
Landscape Installation for new construction	Stage 3
New construction that does not offset 2 times its water use	Stage 3
Filling or topping off swimming pools	Stage 3

The consumption reduction methods that are authorized by the District were previously presented in Table 5.9 (DWR Table 35). Ordinance 1007 outlines the District's enforcement process, which is presented in Table 5.12 (DWR Table 38).

Table 5.12 (DWR Table 38)
Water Shortage Contingency – Penalties and Charges

Penalty or Charge	Stage When Penalty Takes Effect
Written Notice with time frame for correction	Any Stage
Personal contact with follow up written notice	Any Stage
Installation of a flow restricting device	Any Stage
Imposition of water waste fees	Any Stage
Termination of service	Any Stage
Site water audit	Stage 2 or 3

5.7.5 Effect on Revenues and Expenditures (Water Code 10632 (g))

Based on the analysis presented above, the most challenging situation for the District to manage would be a 50 percent reduction in all supplies, which would require the District to employ demand management techniques that achieved 50 percent reduction in water delivered. When water deliveries are reduced, the District also experiences reduced revenue from water rates.

This reduced revenue would be balanced by some reduction in costs, since the District would be purchasing less water from the SCWA. In addition, the District would have the option of deferring planned capital expenditures and utilizing its utility system reserves. The District manages its Water Enterprise Fund to maintain cash reserves including a dedicated $1,000,000 reserve for emergencies. The District's Fiscal Year (FY) 2010-11 budget, reported a total reserve balance of just $3,000,000. The District plans to use

$1,770,000 of the available reserve funding to implement its 5-year capital improvement program. In order to understand the potential impacts of supply reduction on revenues and expenditures, the District has analyzed the effects of 20, 30, and 50 percent reductions in water delivered.

For the purpose of this analysis, FY 2010-2011 budget data was used. The District's current water rate[2] includes a monthly service charge, based on meter size and a commodity charge. These are presented in Table 5.13 below.

Table 5.13
Water Shortage Contingency – Rate Schedule

Meter Size	Monthly Service Charge	Commodity Rate Charge	
		Billing Unit (1,000 gallons)	
5/8" meter	$6.56	Tier 1 up to 18 billing units	$3.12
3/4" meter	$9.84	Tier 2 19-40 billing units	$4.68
1" meter	$16.40	Tier 3 over 40 billing units	$7.00
1-½" meter	$32.80	Flat Rate	$3.76
2" meter	$52.48		
3" meter	$98.40		
4" meter	$164.00		
6" meter	$328.00		

Reductions in water use will affect the revenue that the District receives from its commodity charges because less water will be sold. The anticipated revenue from commodity charges can be estimated by subtracting the total revenue generated from monthly service charges from the total budgeted revenue. Table 5.14 illustrates this calculation, with the assumption that single-family residential accounts are billed the 5/8" meter rate and all other accounts are billed the 4" meter rate.

Table 5.14
Water Shortage Contingency – Effect of Reduced Water Sales on Total Revenue

	No. of Accounts	Monthly Service Charge[a]	Revenue from Monthly Service Charge	Total Budgeted Revenue	Budgeted Revenue Subject to Reduction
	(a)	(b)	(c)	(d)	(e)
			=		=
			(a)*(b)*12 mos/yr		(d)-(c)
Residential	6,187	$ 6.56	$487,041		
Commercial/MFR	655	$ 20.35	$159,951		
Totals			$646,992	$3,579,940	$2,932,948

[a] Assumes average residential at 5/8-inch rate and average Commercial/Multi-Family meter at the 4-inch rate.

Should the District experience a drop in revenues as a result of a water shortage emergency, it would incur lower costs (because it would be purchasing less water from the SCWA); it would defer capital projects as necessary and use available reserves to cover operational expenses. The effect of potential revenue reductions on overall expenditures and reserve balances is illustrated in Table 5.15 below.

[2] Fiscal Year 2010-11 Budget

Table 5.15
Water Shortage Contingency – Effect of Reduced Supply on Revenues & Expenditures

	Normal	20% Reduction in Supply	30% Reduction in Supply	50% Reduction in Supply
Revenues				
Interest	$17,000	$17,000	$17,000	$17,000
Operating Revenue	$3,579,940	$2,993,350	$2,700,055	$2,113,466
Customer Penalties & Fees	$43,000	$43,000	$43,000	$43,000
Misc. Income	$20,000	$20,000	$20,000	$20,000
Totals	**$3,639,940**	**$3,053,350**	**$2,760,055**	**$2,173,466**
Expenditures				
Purchase of Water	$1,473,560	$1,178,848	$1,031,492	$736,780
Operations & Maintenance	$1,586,308	$1,586,308	$1,586,308	$1,586,308
Transfer to CIP	$350,000	$350,000	$350,000	$350,000
Totals	**$3,409,868**	**$3,115,156**	**$2,967,800**	**$2,673,088**
Surplus (Deficit)	**$230,072**	**($61,806)**	**($207,745)**	**($499,622)**
Reserves	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Available Balance	$800,000	$800,000	$800,000	$800,000
Surplus available	$230,072			
Used to Cover Operations		($61,806)	($207,745)	($499,622)
Ending Balance	**$2,030,072**	**$1,738,194**	**$1,592,255**	**$1,300,378**

Example year used for this table is year 2010.

These estimates indicate that the District is able to manage even a 50 percent reduction in supplies with funding, although it may be required to draw upon its reserves, because revenues and expenditures are nearly equal in the most severe supply reduction scenario. However, as demands grow in the future, the District will need to take more actions to manage supply reductions and the revenue impacts will be more severe. In addition to its reserves, the District has established a water shortage surcharge, which it can put into effect during a Stage 2 Water Shortage (25 percent reduction demand required). The District also has the option to defer capital expenditures during a water shortage emergency in order to maintain prudent reserve levels.

The District monitors and reports on its reserve balance monthly, in order to assure that reserve funding remains available to manage unanticipated reductions in demand.

5.7.6 Water Shortage Contingency Ordinance (Water Code 10632(h))

The District has adopted a Water Waste Ordinance through its Ordinance 1007 (Appendix D). It has also developed a model resolution which can be used to declare a shortage emergency and stages of actions.

5.7.7 Mechanisms for Determining Actual Reductions (Water Code 10632(i))

The District's wells and SCWA supply turnouts are all equipped with water meters. In addition, each potable water customer is metered. Non-residential landscape irrigation is metered separately from indoor use at most non-residential sites. The District reads meters on a bi-monthly basis and is able to document both demand reductions and a typically high water use. The District contacts individual customers to resolve issues related to a typically high water use.

SECTION 6
DEMAND MANAGEMENT MEASURES

Demand management measures (DMMs) are also referred to as water conservation measures. The DMMs listed in the Urban Water Management Plan (UWMP) Act correlate to the Best Management Practices (BMPs) for water conservation as originally defined by the California Urban Water Conservation Council (CUWCC). The 2010 UWMP Guidebook uses the terms DMMs and BMPs interchangeably. Hence, in this UWMP, the terms DMMs, BMPs, and conservation measures are used interchangeably.

The purpose of this section is to provide a description of the District's water conservation programs that are currently implemented, those that are planned to be implemented, and how the DMMs/BMPs correspond to the water use reduction plan that would achieve the 2015 and 2020 water use targets described in Section 3. This section estimates the overall conservation savings estimated to occur as a result of implementing the District's planned water conservation program.

The demand and conservation technical analysis conducted for this UWMP was conducted in a report entitled *2010 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update* prepared by Maddaus Water Management, dated November 22, 2010 (herein referred to as the "Maddaus Report"). A copy of the Maddaus Report can be found in Appendix B.

6.1 DMMs Currently Being Implemented

The 2010 UWMP Guidebook lists 14 conservation measures to be addressed. These DMMs correspond to the 14 BMPs in the original CUWCC Memorandum of Understanding (MOU). In this UWMP, the DMMs are listed and described consistently with SBx7-7 and the 2010 UWMP Guidebook. The Maddaus Report identifies three conservation categories: Tier 1, Tier 2, and New Development Standards (ND). Tier 1 refers to the DMMs in the CUWCC reporting form. Tier 2 refers to DMMs that are "above and beyond" the Tier 1 measures and can apply to new or existing development. ND refers to conservation standards and requirements that are applicable to new development.

In 2009, the CUWCC's MOU was amended to allow for a gallon per capita per day approach (GPCD approach) to compliance. This approach calls for a GPCD water use reduction of 18 percent by 2018. The baseline for the GPCD approach must be derived from a set 10 year baseline, which is the 10-year time period from 1997 through 2006.

The District's baseline using the CUWCC GPCD approach is 146 gpcd and the water use target is 120 gpcd in the year 2018. The District's 2010 water use was 103 gpcd, therefore, the District is in compliance using the GPCD approach. The baseline and targets are shown in CUWCC form "Targets/ Compliance (CUWCC MOU)" presented in Appendix G. The completed BMP reports for 2009 and 2010 are included in Appendix F. These reports cover data for fiscal years 2008-2009 and 2009-2010 respectively.

6.2 Other Measures (Additional DMMs Currently Being Implemented Beyond the DMMs Listed in the UWMP Act)

All of the DMM measures which will be implemented by the District are presented in Section 3.5 of this Plan, including the DMM measures which are in addition to those listed in the UWMP Act. The additional measures are referred to as Tier 2 and ND measures.

6.3 CONSERVATION SAVINGS

As presented in Table 3.13 of this UWMP, and as discussed in the Maddaus Report, the District's water conservation program is expected to reduce the District's water consumption. The water conservation program is expected to bring the District's water use to below the SBx7-7 legislated water use targets for 2015 and 2020. Table 3.13 provides the estimated water savings in 5-year increments.

Appendix A
Public Involvement Documents

Appendix A.1
60-Day Notice

VALLEY OF THE MOON WATER DISTRICT
A Public Agency Established in 1962
19039 Bay Street • P.O. Box 280
El Verano, CA 95433-0280
Phone: (707) 996-1037
Fax: (707) 996-7615

February 22, 2011

To: Interested Agencies

Re: Notice of Review and Preparation of the 2010 Urban Water Management Plan

Valley of the Moon Water District is currently reviewing and updating the District's Urban Water Management Plan (UWMP), as required by law. The 2010 UWMP is due to the California Department of Water Resources by July 1, 2011. The UWMP will provide an analysis of projected water demand and supply over the next 25 years as well as an updated water conservation plan.

If you are interested in providing input during the preparation of the UWMP, please contact Shari Walk at (707) 996-1037 or *swalk@vomwd.com*.

Sincerely,

Krishna Kumar
General Manager

Distribution List:

Sonoma County Water Agency, Attention: Grant Davis
Sonoma Valley County Sanitation District, Attention: Grant Davis
City of Sonoma, Attention: Milenka Bates
City of Santa Rosa, Attention: Glen Wright
City of Rohnert Park, Attention: Darrin Jenkins
City of Cotati, Attention: Damien O'Bid
City of Petaluma, Attention: Pamela Tuft
Town of Windsor, Attention: Richard Burtt
North Marin Water District, Attention: Chris DeGabriele
County of Sonoma PRMD, Attention: Pete Parkinson

Appendix A.2
Public Notice Newspaper Advertisements

Source: *Volunteer Now Sonoma Valley*

Wanted: more caring adults to mentor kids in our community

Join your neighbors and friends on Thursday, Feb. 3 from 5:30 to 7p.m. for a complimentary cocktail party at Saddles Restaurant/MacArthur Place as the Sonoma Valley Mentoring Alliance holds its annual recruitment event. There will be 'no obligation information' presented about becoming a mentor, as well as a chance to ask questions, get answers, and mix and mingle with mentors who are happy to share their own experiences as a volunteer in the Stand By Me Mentoring Program.

The Mentoring Alliance is celebrating 15 years of matching local school children with caring adult role models from the Sonoma community. Presently, there are 450 kids who have a mentor in their life, but many more are waiting. Now, more than ever, kids need someone to support them, boost their confidence, and give them the encouragement to set goals for their future.

Careful attention is paid up front to assure that the best matches are made. Mentors commit to meeting with their mentee for one hour a week at a Mentor Center located on 8 public school campuses. On-going training and support is provided, as well as an array of field trips, social events, and extra-curricular activities that help to foster relationships.

There is no cost to become a mentor. Your gift is the one-on-one time you spend building a trusting, caring friendship in a safe and supportive environment.

For more information, call the Mentoring Alliance at 938.1990, or check out the website at sonomamentoring.org.

STAND BY ME
SonomaMentoring.org

...cepting applications for an artist-in-residence for its ceramics program to begin July 1, 2011. The artist will be selected to participate in a six-month residency based on artistic merit as represented by the artist's portfolio, a letter of intent outlining the work they intend to create while at the Community Center, and two professional letters of recommendation.

Applications are due no later than March 1. The selected artist-in-residence will be notified by March 15

The program affords a self-directed emerging or established artist in transition, a supportive environment in which to explore their artwork and ideas. It is designed for those who are dedicated to developing a body of work with a specific

...The program is open to all artists living within the United States and culminates with a gallery exhibition at the end of the residency period.

This residency provides a small living space for the artist; limited access to the center's full-sized kitchen, Internet access, a dedicated space in the ceramics studio, and full time studio access and reduced rates on some materials fees and firings. Resident artists will also have the option to teach (paid) during the regular class sessions, workshops, and summer art camps.

For more information, or to obtain an application for this residency contact the 938.4626, ext. 1, sonomacommunitycenter.org or cc-forrest@vom.com.

CITY OF SONOMA
VALLEY OF THE MOON WATER DISTRICT

The City of Sonoma and the Valley of the Moon Water District are currently reviewing and updating their individual Urban Water Management Plans (UWMPs). Water suppliers are required by law to update their UWMPs every five years. The 2010 UWMPs are due to be submitted to the California Department of Water Resources by July 1, 2011. Each UWMP will provide an analysis of projected water demand and supply over the next 25 years as well as an updated water conservation plan. The public will have an opportunity to review and comment on the draft UWMP. For any questions regarding this Notice or if you are interested in providing input during the preparation of the UWMP, please contact one of the following people. For City of Sonoma water customers, contact Milenka Bates at 933-2230 or at mbates@sonomacity.org. For Valley of the Moon water customers, contact Shari Walk at 996-1037 or at swalk@vomwd.com.

File Other

Sonoma Sun, Published 2/3/11

CERTIFICATION OF PUBLICATION IN
"The Sonoma Index-Tribune"
(Published every Tuesday and Friday)
in the
SUPERIOR COURT
of the
STATE OF CALIFORNIA
In and For the County of Sonoma

"PUBLIC NOTICE"

COUNTY OF SONOMA
STATE OF CALIFORNIA, The undersigned does hereby certify and declare: That at all times hereinafter sworn, deposes and says: That at all times hereinafter mentioned she was a citizen of the United States, over the age of eighteen years and a resident of said county and was at all said times the principal clerk of the printer and publisher of The Sonoma Index-Tribune, a newspaper of general circulation, printed and published in the City of Sonoma, in said County of Sonoma, State of California; that The Sonoma Index-Tribune is and was at all times herein mentioned, a newspaper of general circulation as that term is defined by Section 6000 of the Government Code; its status as such newspaper of general circulation having been established by Court Decree No. 35815 of the Superior Court of the State of California, in and for the County of Sonoma, Department No. 1 thereof; and as provided by said Section 6000, is published for the dissemination of local and telegraphic news and intelligence of a general character, having a bona fide subscription list of paying subscribers, and is not devoted to the interest, or published for the entertainment or instruction of a particular class, profession, trade, calling, race or denomination, or for the entertainment and instruction of such classes, professions, trades, callings, races or denominations; that at all said times said newspaper has been established, printed and published in the said City of Sonoma, in said County and State at regular intervals for more than one year preceding the first publication of this notice herein mentioned; that said notice was set in type not smaller than non-pareil and was preceded with words printed in black face type no smaller than non-pareil, describing and expressing in general terms, the purport and character of the notice intended to be given; that the "Public Notice" of which the annexed is a printed copy, was published in said newspaper at least one time, commencing on the 11th day of February and ending on 11th day of February, 2011 to-wit February 11, 2011.

* * *

I HEREBY CERTIFY AND DECLARE UNDER THE PENALTY OF perjury that the foregoing is true and correct.
EXECUTED this 11th day of February, 2011 at Sonoma, California.

Signed _____
Sharon Lynch Chief Clerk

CITY OF SONOMA
VALLEY OF THE MOON WATER DISTRICT

The City of Sonoma and the Valley of the Moon Water District are currently reviewing and updating their individual Urban Water Management Plans (UWMPs). Water suppliers are required by law to update their UWMPs every five years. The 2010 UWMPs are due to be submitted to the California Department of Water Resources by July 1, 2011. Each UWMP will provide an analysis of projected water demand and supply over the next 25 years as well as an updated water conservation plan. The public will have an opportunity to review and comment on the draft UWMP. For any questions regarding this Notice or if you are interested in providing input during the preparation of the UWMP, please contact one of the following people. For City of Sonoma water customers, contact Milenka Bates at 933-2230 or at *mbates@sonomacity.org*. For Valley of the Moon water customers, contact Shari Walk at 996-1037 or at *swalk@vomwd.com*.

2-29 Pub: Feb. 11, 2011 (1t)

sonomaindex-tribune
sonomamagazine
sonomanews.com

707-938-2111
P.O. Box C
Sonoma, CA 95476

INVOICE

ACCOUNT NO.	LEGAL NO.	INVOICE DATE
00220	2-29 2011	2/11/2011

PAGE 1 OF 1

CHECK NO.	AMOUNT ENCLOSED
#	$

CREDIT CARD CHARGE FORM

CREDIT CARD ☐ DISCOVER ☐ VISA ☐ MasterCard

CARD #

EXPIRES ___/___ V CODE

CARD BILLING ZIP CODE SIGNATURE

Sonoma, City Of
Attn: Accounts Payable
No.1 The Plaza
Sonoma, CA 95476

Please return the top portion of this statement along with your payment

Quantity	Description	Rate	Amount
4	PUBLIC NOTICE: CITY OF SONOMA & VOM WATER DISTRICT/URBAN WATER MANAGEMENT PLANS PUB FEB 11, 2011	$10.00	$40.00

Total Due $ $40.00

510 62001 350
MB

RECEIVED
FEB 14 2011
MB

Date

Approved by

Account

Terms: NET 20 - CREDIT ESTABLISHED

00220
Sonoma, City Of
Invoice Date: 2/11/2011

Appendix A.3
Public Hearing Notices

Notice of Public Hearing

Valley of the Moon Water District

Hearing Topics: 1) Community Water Use Target for 2020, as required by Senate Bill x7-7, the Water Conservation Act of 2009 and 2) draft 2010 Urban Water Management Plan

Date: June 7, 2011, 6:35 pm

Location: Board of Directors Chambers
Valley of the Moon Water District
19039 Bay Street, Sonoma, CA 95476

The Board of Directors of the Valley of the Moon Water District will hold a public hearing on June 7, 2011 at 6:35 p.m. to receive comments on 1) Community Water Use Target for 2020, as required by Senate Bill x7-7, the Water Conservation Act of 2009 and 2) draft 2010 Urban Water Management Plan (Plan). The Valley of the Moon Water District's proposed Community Water Use Target for 2020 is included in the Plan. The purpose of the Plan is to consolidate information regarding water supply and demand, provide public information, and improve statewide water planning. The Plan may be reviewed at the following locations:

Valley of the Moon Water District Office, 19039 Bay Street, Sonoma, CA 95476

Valley of the Moon Water District's web page at http://www.vomwd.com

Oral and written testimony will be taken at the hearing. Written comments may also be submitted to the General Manager of the Valley of the Moon Water District, P.O. Box 280, El Verano, CA 95433, for receipt prior to the hearing.

Sonoma Index-Tribune, Publish Dates 5/24/11 and 5/31/11

Appendix A.4
Resolution of Adoption

RESOLUTION NO. 110601

RESOLUTION OF THE BOARD OF DIRECTORS OF THE VALLEY OF THE MOON WATER DISTRICT ADOPTING 1) SB x7-7 METHOD 3 TO SET THE DISTRICT'S INTERIM 2015 COMMUNITY WATER USE TARGET AT 136 GALLONS PER CAPITA PER DAY (GPCD) AND FINAL 2020 COMMUNITY WATER USE TARGET AT 124 GPCD AND 2) THE 2010 URBAN WATER MANAGEMENT PLAN

WHEREAS, in 2009, SB x7-7, the Water Conservation Act (SB x7-7), was signed into law setting a goal of 20% reduction in statewide urban per capita water use and requires urban water retailers that must comply with the Urban Water Management Planning Act (UWMP Act) to set a community urban per capita water use targets; and

WHEREAS SB x7-7 requires each urban water retailer to determine its 1) base gross gallons per capita per day (gpcd), 2) interim 2015 and final 2020 community water use targets, 3) 5% minimum water use reduction requirement, and 4) 2015 and 2020 compliance year gross gpcd and include this information in the 2010 UWMP; and

WHEREAS, SB x7-7 requires each urban retail water agency to conduct at least one public hearing to accomplish all of the following: 1) allow community input regarding the urban retail water supplier's implementation plan for complying with this part, 2) consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part, and 3) adopt a method for determining its community water use targets; and

WHEREAS, the Valley of the Moon Water District (District) has prepared an SB x7-7 Water Use Reduction Implementation Plan (Implementation Plan) and will be incorporated into the District's 2010 Urban Water Management Plan (2010 UWMP); and

WHEREAS, the District staff recommends that the Board adopt SB x7-7 Method 3 to set the District's interim 2015 community water use target at 136 gpcd and final 2020 community water use target at 124 gpcd and projects that the District will be in compliance with the community water use targets by continuing to implement water conservation programs; and

WHEREAS, the Urban Water Management Planning Act, California Water Code Section 10610 *et seq.*, requires that every urban water supplier directly or indirectly supplying water for municipal purposes to more than 3,000 customers prepare an Urban Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the District staff, with the assistance of consultants Maddaus Water Management and Winzler & Kelly, has prepared the 2010 UWMP for the District to meet the requirements of Urban Water Management Planning Act, in accordance with guidelines developed by the California Department of Water Resources; and

WHEREAS, District staff and consultants who prepared the 2010 UWMP have the training, experience, and expertise necessary to prepare a plan meeting the requirements of the Urban Water Management Planning Act; and

WHEREAS, the 2010 UWMP must be adopted after public review and a public hearing by the District's Board of Directors and must be filed with the Department of Water Resources; and

WHEREAS, the District, in compliance with the legislative requirements, has prepared an SB x7-7 Water Use Reduction Implementation Plan and 2010 UWMP, and commencing on May 24, 2011 made those documents available for public review; and

WHEREAS, the District, on June 7, 2011, held a duly noticed public hearing before this Board and received comments; and

WHEREAS, District staff, consultants, and the Board have reviewed and considered the comments made on the 2010 UWMP, and the Board has reviewed and considered the final 2010 UWMP, the District's staff reports, and the presentations by District staff and consultants; and

WHEREAS, the 2010 UWMP was prepared in accordance with, and meets the requirements of, the Urban Water Management Planning Act, and the facts, assumptions, and analyses in the 2010 UWMP are reasonable and supported by substantial evidence;

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Valley of the Moon Water District hereby finds, determines, and declares as follows:

1. All of the above recitals are true and correct.
2. SB x7-7 Method 3 is hereby adopted to set the Interim 2015 Community Water Use Target at 136 gpcd and Final 2020 Community Water Use Target at 124 gpcd.
3. The 2010 Urban Water Management Plan is hereby approved and adopted.
4. The General Manager is authorized and directed to provide a copy of 2010 UWMP to the Department of Water Resources and otherwise as required by Water Code section 10644(a).

THIS RESOLUTION PASSED AND ADOPTED THIS 7th DAY OF JUNE, 2011, by the following votes:

Director Bandur No

Director Bramfitt Aye

Director Kenny Aye

Director Prushko No

Director Townsend Aye

By Thomas M. Bandur
President

By Shari Walk
Deputy Secretary

AYES 3 NOES 2 ABSENT 0 ABSTAIN 0

I HEREBY CERTIFY that the foregoing Resolution was duly adopted at a regular meeting of the board of Directors of Valley of the Moon Water District, held on the 7th day of June, 2011, of which meeting all Directors were duly notified and at which meeting a quorum was present at all times and acting.

By Shari Walk, Deputy Secretary

Appendix A.5
Transmittal Letters for Final UWMP

VALLEY OF THE MOON WATER DISTRICT
A Public Agency Established in 1962
19039 Bay Street • P.O. Box 280
El Verano, CA 95433-0280
Phone: (707) 996-1037
Fax: (707) 996-7615

July 1, 2011

Department of Water Resources (DWR)
Statewide Integrated Water Management
Water Use and Efficiency Branch
P.O. Box 942836
Sacramento, CA 94236-0001
Attention: Coordinator, Urban Water Management Plans

California State Library (State Library)
Government Publications Section
P.O. Box 942837
Sacramento, CA 94237-0001
Attention: Coordinator, Urban Water Management Plans

County of Sonoma
2300 County Center Drive, Suite B177
Santa Rosa, CA 95403
Attention: County Clerk

Enclosed is your copy of the Final Urban Water Management Plan 2010 for the Valley of the Moon Water District is the following formats: Print copy plus CD (DWR), Print copy (State Library), and Print copy (County Clerk).

A copy of the UWMP checklist can be found in Appendix H of the attached report. For any questions regarding this report, please feel free to call me at (707) 996-1037 or email at kkumar@vomwd.com.

Sincerely,

Krishna Kumar
General Manager

Appendix A.6
Notice of Draft UWMP Availability

VALLEY OF THE MOON WATER DISTRICT
A Public Agency Established in 1962
19039 Bay Street • P.O. Box 280
El Verano, CA 95433-0280
Phone: (707) 996-1037
Fax: (707) 996-7615

May 24, 2011

To: Interested Agencies

Re: Notice of Availability of the 2010 Draft Urban Water Management Plan

The Valley of the Moon Water District Draft 2010 Urban Water Management Plan (draft plan) is now available for public review. A copy of the draft plan can be found at the following website link: http://www.vomwd.com/. A copy of the draft plan may also be viewed during normal business hours at the District's main office located at:

19039 Bay Street
El Verano, CA 95433

The District Board of Directors will hold a public hearing at 6:35 p.m., June 7, 2011 in the District Board Chambers at the address listed above to receive comments to the draft plan. Comments can also be received by emailing to: *swalk@vomwd.com* prior to the hearing date.

Sincerely,

Krishna Kumar
General Manager

Distribution List:

Sonoma County Water Agency, Attention: Grant Davis
Sonoma Valley County Sanitation District, Attention: Grant Davis
City of Sonoma, Attention: Milenka Bates
City of Santa Rosa, Attention: Glen Wright
City of Rohnert Park, Attention: Darrin Jenkins
City of Cotati, Attention: Damien O'Bid
City of Petaluma, Attention: Pamela Tuft
Town of Windsor, Attention: Richard Burtt
North Marin Water District, Attention: Chris DeGabriele
County of Sonoma PRMD, Attention: Pete Parkinson

Appendix B
Maddaus Report

Valley of the Moon Water District

2010 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update

November 22, 2010

MADDAUS WATER MANAGEMENT

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1. EXECUTIVE SUMMARY

1.1 Introduction

The 2010 Urban Water Management Plan demand and conservation technical analysis was conducted by Maddaus Water Management (MWM) for the Valley of the Moon Water District. The purpose of the analysis was to:

1. Calculate a demand forecast for the year 2010 to 2035.
2. Calculate the range of conservation costs and savings for the year 2010 to 2035. This effort included:
    - Incorporate activity from current conservation measures for the year 2005 and 2009 into the DSS model.
    - Evaluate up to three new conservation measures that will reduce future water demand.
    - Estimate the costs and water savings of these measures.
    - Combine the measures into increasingly more aggressive programs and evaluate the costs and water savings of these programs.

1.2 Long-Term Demand and Conservation Program Analysis Results

The project for the Sonoma County Water Agency (SCWA) contractors included two main parts, (1) create a demand and conservation analysis for 2010 to 2035 and (2) evaluate conservation savings potential for the years 2010 to 2035 with a variety of different measures and conservation programs.

The first step in the analysis was to review and analyze historical water use production and billing data. For most contractors, the billing data was provided for the years 2000 to 2009 (a few contractors had data back to 1995 and one contractor has new meters, so data is only available after the year 2006). The data was graphically analyzed and discussed with the individual contractors. The historical water use along with the selected population and employment projections were used to create a demand forecast for the year 2010 to 2035.

Once the demands were completed, the conservation measures were analyzed for a total of 31 measures. The conservation analysis included all the measures from the 2005 conservation study that MWM completed for the SCWA contractors along with up to three new measures for each contractor. The following important assumptions about the conservation measures were included in this analysis:

1. Due to increased regulations and additional research and analysis on conservation measures, conservation measures Tier 2-8 (Reduced Connection Fees), Tier 2-9 (Synthetic Turf Rebate) and Tier 2-11 (Dishwasher Rebate) were removed from all programs at the request of the contractors.
2. No modifications to costs or savings assumptions were made to any of the Tier One and Tier Two Measures. To comply with new regulations and ordinances, minimal changes were made to the New Development measures ND-1 to ND-8
3. The table of the new measures for each contractor is listed in Section 5.1. An analysis of the new state law SB 407 was included for all contractors.
4. New development ordinances were updated to reflect new local ordinances, the Model Water Efficient Landscape Ordinance, and the Cal Green building code.

Table ES-1, ES-2 and ES-3 and Figure ES-1 show the water demands and conservation savings for the years 2010 to 2035. The Plumbing Code includes the new California State Law requiring High Efficiency Toilets and High Efficiency Urinals by 2014.

Table ES-1
Conservation Measures

Measure Name	Program Existing	Program Existing & New	Program Tier 1	Program Tier 1 & Tier 2	Program Tier 1 & ND	Program Tier 1 & Tier 2 & ND
CUWCC #1a - Residential Water Surveys - Interior	✓	✓	✓	✓	✓	✓
CUWCC #1b - Residential Water Surveys - Outdoor	✓	✓	✓	✓	✓	✓
CUWCC #2 - Plumbing Retrofit Kits	✓	✓	✓	✓	✓	✓
CUWCC #3 - System Water Loss Reduction	✓	✓	✓	✓	✓	✓
CUWCC #5a - Large Landscape Water Budgets	✓	✓	✓	✓	✓	✓
CUWCC #5b - Large Landscape Audits	✓	✓	✓	✓	✓	✓
CUWCC #6 - Washer Rebates	✓	✓	✓	✓	✓	✓
CUWCC #7 - Residential Public Education	✓	✓	✓	✓	✓	✓
CUWCC #9 - Commercial Water Audits	✓	✓	✓	✓	✓	✓
CUWCC #14a - RSF Toilet Replacement	✓	✓	✓	✓	✓	✓
CUWCC #14b - RMF Toilet Replacement	✓	✓	✓	✓	✓	✓
Tier 2 - 1 Rain Sensor Retrofit				✓		✓
Tier 2 - 2 Cash for Grass				✓		✓
Tier 2 - 3 Financial Incentives for Being Below Water Budget				✓		✓
Tier 2 - 4 Irrigation Meter Rebates				✓		✓
Tier 2 - 5a Smart Irrigation Controller Rebates - RSF				✓		
Tier 2 - 5b Smart Irrigation Controller Rebates - RMF, CII, IRR				✓		
Tier 2 - 6 Financial Incentives/Rebates for Irrigation Upgrades				✓		
Tier 2 - 7 Hotel Retrofit				✓		✓
Tier 2 - 10 High Efficiency Toilets				✓		✓
Tier 2 - 12 CII Rebates - Replace Inefficient Water Using Equipment				✓		✓
Tier 2 - 13 New Commercial Urinals				✓		✓
Tier 2 - ND1 Rain Sensor Retrofit	✓	✓			✓	✓
Tier 2 - ND2 Smart Irrigation Controller	✓	✓			✓	✓
Tier 2 - ND3 High Efficiency Toilets					✓	✓
Tier 2 - ND4 Dishwasher New Efficient					✓	✓
Tier 2 - ND5 Clothes Washing Machine Requirement					✓	✓
Tier 2 - ND6 Hot Water on Demand					✓	✓
Tier 2 - ND7 High Efficiency Faucets and Showerheads					✓	✓
Tier 2 - ND8 Landscape and Irrigation Requirements	✓	✓			✓	✓
Grey Water Retrofit		✓				
SB 407 (Plumbing Retrofit on Resale or Remodel)		✓				

NOTE – Due to increased regulations and additional research and analysis, conservation measures Tier 2-8, Tier 2-9 and Tier 2-11 are out of date and were removed from analysis at the request of all the contractors.

Figure ES-1
Long Term Demands with Conservation Programs

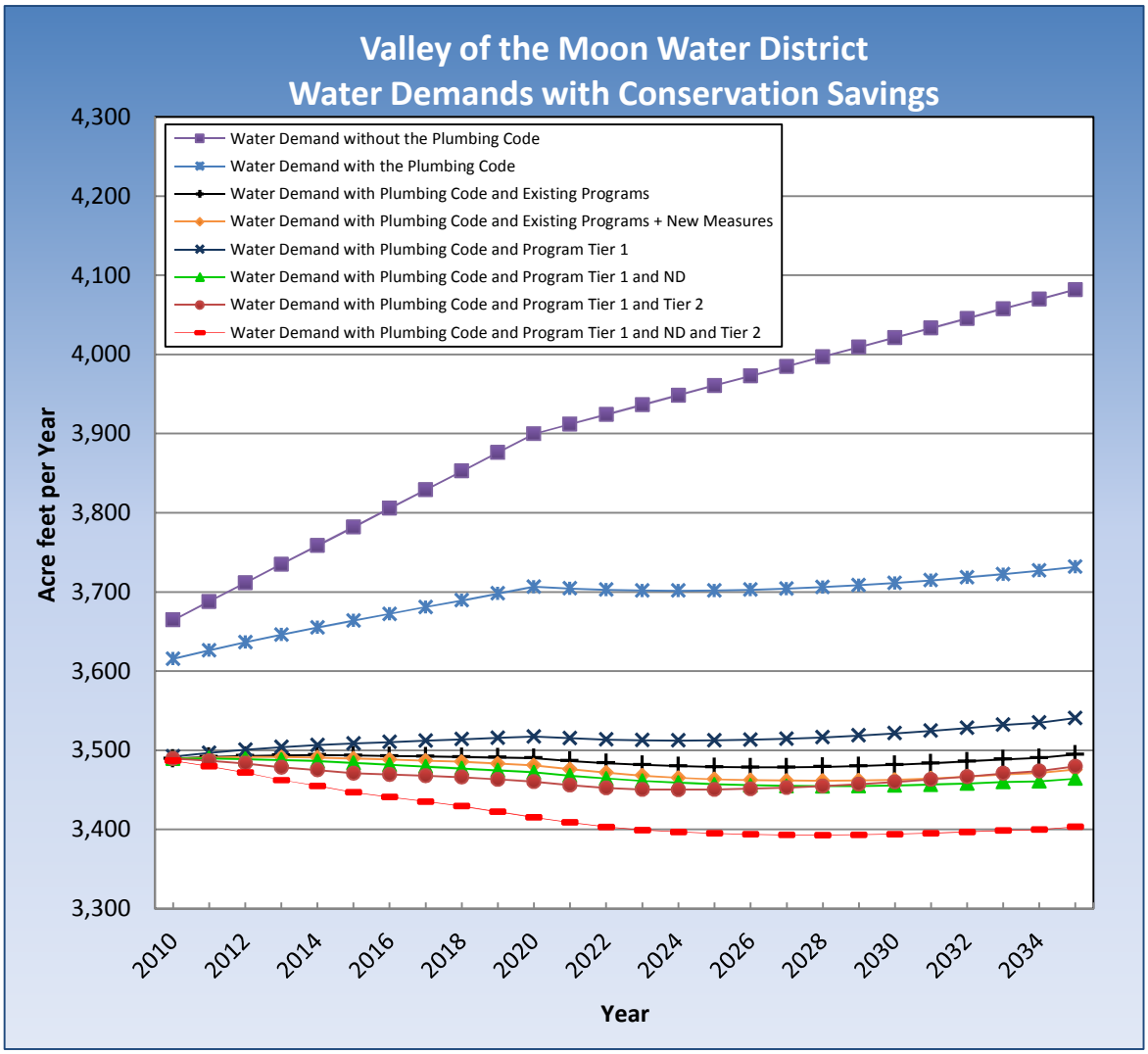


Table ES-2
Water Demand Projections

Valley of the Moon Water District Water Demand with Conservation Program Savings						
Water Demand with Plumbing Code and Conservation Program Savings (AFY)	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Water Demand without the Plumbing Code	3,665	3,782	3,900	3,961	4,021	4,082
Water Demand with the Plumbing Code	3,616	3,664	3,707	3,702	3,711	3,732
Water Demand with Plumbing Code and Existing Programs	3,490	3,494	3,490	3,479	3,482	3,495
Water Demand with Plumbing Code and Existing Programs + New Measures	3,490	3,490	3,481	3,463	3,463	3,476
Water Demand with Plumbing Code and Program Tier 1	3,492	3,509	3,517	3,513	3,521	3,541
Water Demand with Plumbing Code and Program Tier 1 and ND	3,490	3,484	3,472	3,457	3,455	3,464
Water Demand with Plumbing Code and Program Tier 1 and Tier 2	3,490	3,471	3,460	3,450	3,460	3,480
Water Demand with Plumbing Code and Program Tier 1 and ND and Tier 2	3,487	3,447	3,415	3,395	3,394	3,403

Table ES-3
Economic Analysis of Alternative Programs

Valley of the Moon Water District Comparison of Conservation Program Costs and Savings									
Conservation Program	Water Utility Benefit-Cost Ratio	Community Benefit-Cost Ratio	2035 Water Savings (AFY)	2035 Indoor Water Savings (AFY)	2035 Outdoor Water Savings (AFY)	Total Water Savings as a % of Total Production in 2035*	30 Year Present Value of Water Utility Costs ($1,000)	Total Utility Cost for Five Years 2011-2015 ($1,000)	Utility Cost of Water Saved ($/AF)
Existing Program	1.26	0.99	237	146	91	6.3%	$2,803	$937	$490
Existing Program + New Measures	1.26	0.98	256	150	106	6.9%	$2,937	$989	$488
Tier One	1.13	1.44	191	146	45	5.1%	$2,783	$929	$557
Tier One + Tier Two	0.99	0.95	252	160	92	6.8%	$3,908	$1,724	$621
Tier One + New Development	1.34	1.06	268	177	91	7.2%	$2,835	$953	$458
Tier One + Tier Two + New Development	1.14	0.83	328	191	138	8.8%	$3,960	$1,748	$529

2. INTRODUCTION AND PURPOSE

The purpose of this report is to present an overview of the demand and conservation evaluation process which has been completed for the Valley of the Moon Water District (District). The goal was to develop forecasts of demand and conservation savings for the 2010 Urban Water Management Plan.

The Valley of the Moon Water District has a current water conservation program. This report evaluates whether expanding existing efforts is a cost-effective way to meet future water needs.

The conservation measures and programs were analyzed using the Least Cost Planning Water Demand Management Decision Support System (DSS Model). In this report demand management and water conservation are used interchangeably. The evaluation includes measures directed at existing accounts as well as new development measures to make new residential and business customers more water efficient. Six programs were provided to help evaluate the net effect of running multiple measures together over time. Assumptions and results for each of the 31 individual measures and six programs will be described in detail in this report.

2.1 Contents

This report provides a general overview for the methodology, assumptions, and results for the demand forecast and conservation analysis. The following information is included in this report and is discussed in individual sections below:

- Overview of evaluation process
- Baseline water demands with and without the plumbing code
- Comparison of individual conservation measures
- Results of the conservation analysis
- Conclusions
- Appendix A: Assumptions for the Conservation Measures Evaluated
- Appendix B: Water Production and Billing Data Graphs for all Customer Categories

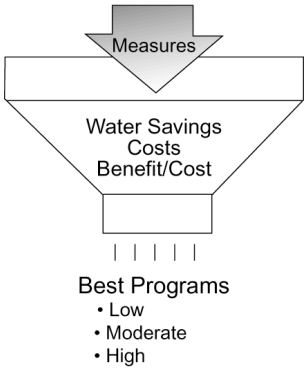
3. OVERVIEW OF EVALUATION PROCESS

Long Term Demand and Conservation Evaluation Process

During the evaluation process, water demand and savings were estimated. Benefits and costs were compared in a formal present value analysis and conclusions were drawn about which measures produce cost-effective water savings. The measure costs were previously developed by MWM and the contractors as part of the 2005 conservation study MWM completed for the SCWA contractors. This process can be thought of as an economic screening process, shown in Figure 1. Packaging the best measures into alternative programs allows Valley of the Moon Water District to consider what level of conservation implementation is appropriate.

Figure 1

Evaluation Process



Benefit-cost analysis has been used by many water agencies to evaluate and help select a water conservation measure best suited to local conditions. This analysis requires a locale-specific set of data, such as historical water consumption patterns by customer class, population projections, age of housing stock, and prior conservation efforts.

The following ten steps were used to implement the methodology by expanding upon the same DSS Model used to prepare the demand projections.

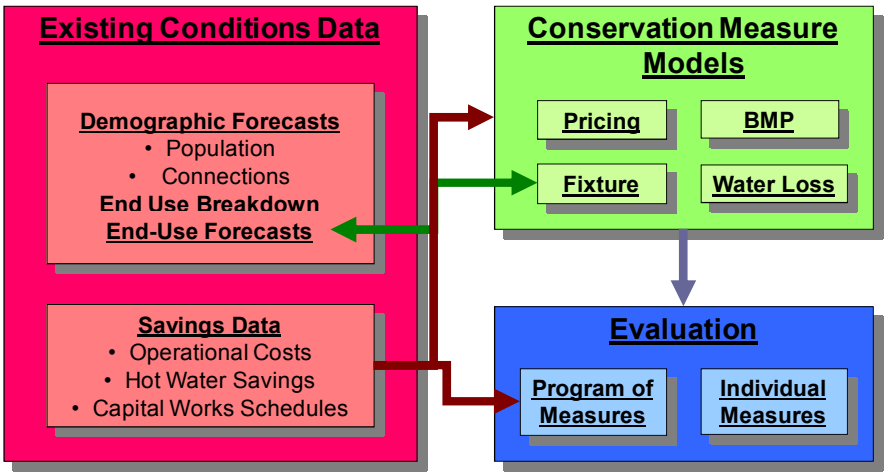
1. **Generate water use projections with and without the state and national plumbing code**. Projections cover each key customer category and are broken down into indoor and outdoor end uses. Evaluate the impact of the plumbing code changes arising from the 1992 and 2005 Federal Energy Policy Act. The plumbing code also includes fixture changes that will results from the State of California plumbing code which requires only high efficiency toilets and high efficiency urinals be sold in the state after the year 2014.
2. **Evaluate previous conservation measures and up to three new measures** to identify those that are applicable to the service area. Develop appropriate unit water savings and costs for each measure.
3. **Estimate the affected customers (or number of accounts) for each conservation measure** by dividing the measure's projected customers (or accounts) that implement the measure by the total service area customers (accounts). This factor is called the market penetration or installation rate.
4. **Estimate total annual average day water savings.** The water savings are computed by multiplying unit water savings, per measure, by the market saturation or installation rate (i.e.

10% to 90% of accounts), and then multiplying by the number of units in the service area (such as dwelling units) targeted by a particular measure. The indoor and outdoor water savings were also calculated.

5. **Identify benefits to the water agency** including potential reduced water purchases from SCWA, calculated as the wholesale water rate and delivery cost per acre-foot for each contractor with an escalator based on historical water rates and Consumer Price Index (CPI).
6. **Quantify total benefits for each year** in the planning period by multiplying average water savings for each measure by the computed value of the benefits.
7. **Determine initial and annual costs to implement the measures** based upon current conservation program data, local experience, and the costs of goods, services, and labor in the community. This is multiplied by the number of units participating each year and then added to overall administration and promotion costs to arrive at a total measure cost, which may be spread over a number of years. For this project the costs for all measures were used from the 2005 study, except for the three new measures selected by each contractor which had all new parameters developed.
8. **Compare costs of measures** by computing the present value of costs and costs of water saved over the planning period.
9. **Compile six programmatic packages** or programs containing various new and existing measures.
10. **Evaluate the six programs for water savings and cost-effectiveness** and identify the point of diminishing returns from further investments in conservation.

For conservation measure evaluation, the DSS Model performs economic analysis by using net present value and benefit-to-cost ratio as economic indicators. The benefit cost analysis is performed from various perspectives including the utility and community (community perspective equates to the utility plus customer). Figure 2 shows the structure of the model. Results are presented in subsequent sections.

Figure 2
Structure of the DSS Model



4. WATER DEMANDS WITH AND WITHOUT PLUMBING CODE

4.1 Future Population and Employment Projections

Description of Population and Employment Forecasts

There are generally three main sources of population and employment projections used to generate future water demands for the 2010 Urban Water Management Plans.

Available Demographic Projections

- *Local General Plan (population and employment)* – Typically these plans, depending upon when they were published, have a population and jobs forecast for 2030 and build out.
- *Association of Bay Area Governments (ABAG) (population and employment)* - ABAG recently published a new projections report in 2009 that includes population and employment estimates for each city in the Bay Area. This report provides estimates for 2000, 2005, 2010, 2015, 2020, 2025, 2030 and 2035. ABAG publishes demand projections every two years. The previous DSS Model projections and ABAG Projections for 2005, 2007, and 2009 were reviewed to determine the most appropriate data set to use in this DSS Model update.
- *Water Supply Assessments*

At the Valley of the Moon Water District's request, the population and employment projections were based on the 2005 Sonoma County Draft General Plan as shown in Figure 3, 4 and Table 1 and 2. The values shown in the "Selected" column were used to create the demand projections.

Figure 3
Population Projections

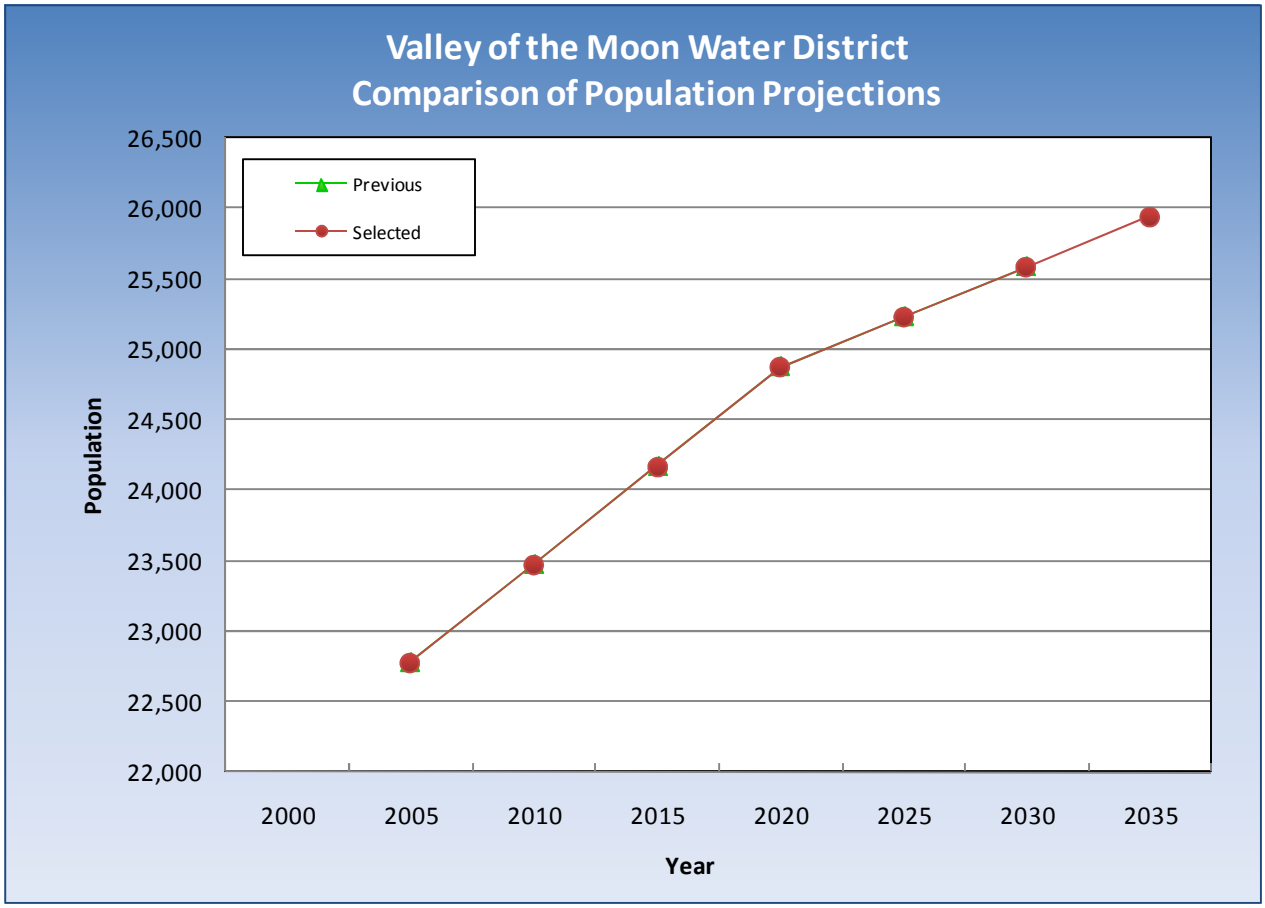


Table 1
Table of Population Projections

Valley of the Moon Water District Comparison of Population Projections		
Year	**Previous[1]**	**Selected[2, 3]**
2000		
2005	22,785	22,785
2010	23,478	23,478
2015	24,174	24,174
2020	24,873	24,873
2025	25,229	25,229
2030	25,586	25,586
2035	NA	25,943

Notes:
1) DSS Model data based on the Sonoma County Draft General Plan 2005
2) Based on the Sonoma County Draft General Plan 2005
3) Projection linearly extended from 2030 to 2035.

Figure 4
Employment Projections

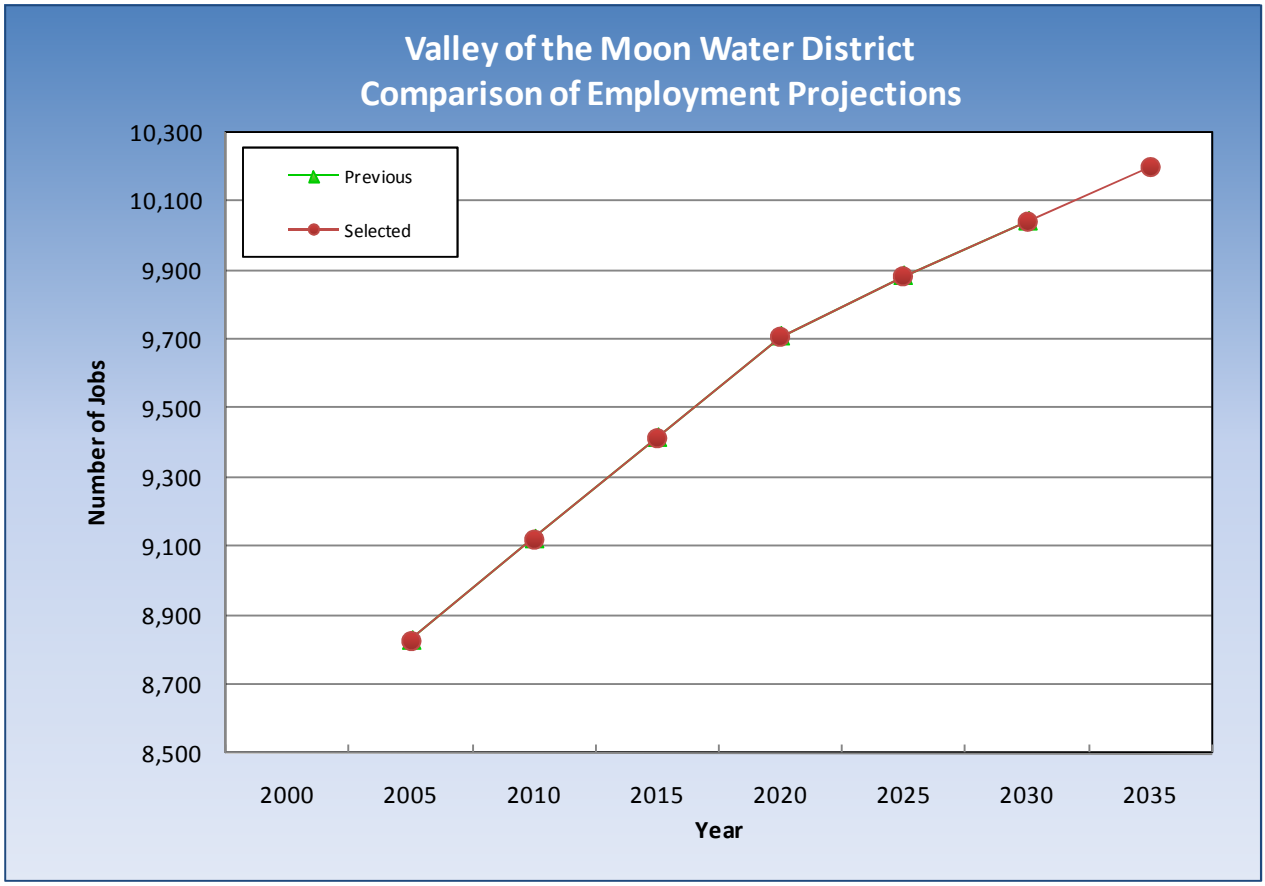


Table 2
Table of Employment Projections

Valley of the Moon Water District Comparison of Employment Projections		
Year	**Previous[1]**	**Selected[2,3]**
2000		
2005	8,829	8,829
2010	9,122	9,122
2015	9,415	9,415
2020	9,707	9,707
2025	9,883	9,883
2030	10,041	10,041
2035	NA	10,200

Notes:
1) DSS Model data based on the Sonoma County Draft General Plan 2005
2) Based on the Sonoma County Draft General Plan 2005
3) Projection linearly extended from 2030 to 2035.

4.2 Water Use and Demographic Data Inputs to the Model

Description of "Water Use Data Input Sheet"

Figure 5 is a two-page print out of an Excel spreadsheet. The purpose of this "Water Use Data Input Sheet" is to gather and document basic information about the individual service area. The data shown on the "Water Use Data Input Sheet" can be broken into two main categories, (a) current water use data and (b) demographic data. Each area is broken out below and helps to provide some basic definitions and assumptions.

(a) Water Use Data

- *Model Start Year* – This is the starting year for the analysis. For this project, the start year for the model is 2005. The selection of 2005 as a model start year allowed the historical conservation efforts to be included for the past 5 years (2005 to 2009). The DSS Model includes 30 years of data projecting information until the year 2035.
- *Base Year for Future Water Factors* - Based on an analysis of historical water billing data, each contractor selected a year or average of multiple years that is representative of current water use and used as a base year demand factor for developing future water use projections. The year(s) was chosen by the contractors for the following reasons:
    1. The selected years shows less of an effect of the recession. For all contractors the years 2008 and 2009 show a dip in water demand in many areas due to reduction in economic activity.
    2. The years selected had relatively "normal" climate conditions – i.e. not a drought or excessively wet year, so no significant weather adjustments were necessary. For all contractors the years 2008 and 2009 were affected by drought conditions. The water billing or production data was not weather normalized for this analysis.
    3. Many contractors elected to average a few years of data for the analysis. Some contractors selected an individual year as they felt it was representative in terms of weather, vacancy, and customer water use for demand projection purposes.
    4. No additional adjustment factors were added other than the "new single family home category" for four of the contractors (City of Santa Rosa, City of Sonoma, Valley of the Moon and North Marin Water District). The adjustment was made based on analysis of actual data which showed an increase in water use for homes built since 2000.
- *Average gal/day/acct*- This is the amount of water in gallons that is used per day, per account.
- *Indoor/outdoor water use* – This is the amount of water per account split into the percent that is used indoors and outdoors.
- *Consumption by customer class*- This shows the annual amount of water used for an entire calendar year, broken down by customer class (Single Family, Multi Family, Commercial, Irrigation, etc.)
- *Provision for New Single Family Account Use*– For selected agencies, and upon their specific request, a new category was created to model water use of new single family homes. This value is held constant in the baseline projection and not subject to plumbing codes. All new homes include the plumbing code change in the State of California that requires HETs in 2014. The new homes will also be affected by Cal Green building code after July 1, 2011 and required to install efficient fixtures for the toilets, low flow shower heads and faucets. The effects from Cal Green were run as a conservation measure as they were not in effect at the time of this analysis.

- *Unaccounted for water (UFW) also known as Non-Revenue Water* – This is the sum of all water input to system that is not billed (metered and unmetered) water consumption, including apparent (metering accuracy) and real losses. The values were calculated by taking the difference between the amount of water produced and the amount of water that was sold. Data provided by the water contractor was used, if provided, unless UFW was less than 7 percent, in which case 7 percent was used.
- *Water Produced*– This is the total amount of potable water produced. The water can come from multiple sources including amount purchased from SCWA, purchased from other agencies, local surface water, or obtained from groundwater. This does not include recycled water.
- *Peak day factor* – The ratio of water produced on the maximum day of the year to that produced on the average day.

(b) Demographic Data

- *Census 2000* – The 2000 Census data was used as a general reference when determining population and household sizes for each individual city (and/or unincorporated area) serviced by the water agencies.
- *2005 Valley of the Moon Water District Service Area Population*- The 2005 total population for the Valley of the Moon Water District was taken directly from the 2005 selected population source discussed earlier in this report.
- *Single and multi-family dwelling units*- The 2005 single family dwelling units is equal to the number of single family accounts for 2005. The 2005 multi family dwelling unit estimate was calculated by applying a growth factor to the 2000 data as noted on the water use data sheet in Figure 5.
- *Procedure for service areas not contiguous with city boundaries* – When a service area serves outside a city boundary, estimates were generated either from census tract data when available for the unincorporated areas, Department of Finance data, ABAG Projections, DWR reported data, General Plan or by the local water district if known. If none of the six sources were available, then the modeling team worked with the local water district to make reasonable estimates.
- *Employment data*– The employment figures were obtained from the selected source as discussed earlier in this report.

In summary, the key features of this sheet include the existing 2005 level of water use, 2005 baseline accounts in each customer category, and 2005 baseline forecasts for population and employment.

Figure 5
Water Use Data Input Sheet

Valley of the Moon Water Service Area[1]

DSS Input Sheet

October 1, 2010

Base Year Average Use and Indoor Percentages by Billing Category for DSS Model[2]

	Single family		Multifamily		Commercial			
Year	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor		
1997-2006	302	56%	1201	79%	1318	76%		
	Bimonthly billing		Bimonthly billing				No Industrial Accounts	
	Indoor % based on 10 year average of March-Feb Water use							

Irrigation MF Residential		Irrigation Commercial		Institutional[7]		New Single Family		
Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Indoor,gcd
3771	0%	1387	0%	3378	46%	365	38%	55.9
		Averages years 2001-2006 only		Bimonthly Billing		New Single Family factor from Krishna Kumar 7/20/2010		
		One large 3-4MGD commercial account is now using a well				Average gpd/a is for 2005 to 2008 is 365 gpd/a. Average of 2001 to 2008 363.5 gpd/a		

Data for DSS Model - - Start Year: 2005

Category	Number of Accounts in Start Year[3]	Water Use in Base Year(s) gpd/a[2]	Water Use mgd	Use Profile Percent	Water Use gcd	Indoor Water Use gcd
Single family	6,124	302	1.847	67.06%	121	68
Multifamily	413	1,201	0.495	17.98%	76	60
Commercial	165	1,318	0.217	7.88%		
Irrigation MF Residential	18	3,771	0.069	2.49%		
Irrigation Commercial	11	1,387	0.015	0.55%		
Institutional[7]	33	3,378	0.111	4.03%		
New Single Family	1	365	0.000	0.01%	146.6	55.9
Total Billed =	6,764	11,722	2.754	100.00%		

Projected UFW for DSS Model[5]	**13.1%**	Percent	
Water Produced for use in DSS Model[4]	**3.17**	MGD	Add UFW % to Total Billed Water Use
			Water Produced = Billed /(1- Projected UFW for DSS Model) 3.17
Peaking Factor =	1.65	Provided by Agency	
Peaking Factor for DSS Model=	**1.65**	Provided by Agency	

- *Blue cells are entered by modeler*
- *Yellow cells are input to DSS Model*

NOTES

1. - Valley of the Moon service area consists of four islands within the unincorporated area of the Sonoma Valley. The main island is located in the "Springs Communities" of Fetter Hot Springs, Agua Caliente, Boyes Hot Springs, and El Verano. The other islands are located in the communities of Trinity Oaks, Glen Ellen, and Temelec.

Valley of the Moon Water District serves a total area of approximately 7,200 acres and serve a population of about 23,000 persons with approximately 6,700 total accounts. 97 % of customers are residential accounts. Almost 90 % of the water is purchased from the Sonoma County Water Agency via their Russian River facilities. The remaining water is produced from municipal wells used primarily in the summer months to supplement the purchased water during peak use periods.

2 - Average gpd/a is based on a 12-month moving average through December 2009. Indoor use is based on average of 2 lowest consecutive months in the winter if meters read bimonthly, or single lowest month if meters read monthly.

3 - Number of accounts is from data provided by water agency for this project, based on a calendar year.

4 - Total water produced is calculated from the total billed water use and the projected UFW

5 - Unaccounted for Water (UFW) is the percent difference between the total water purchased and the total billed water use.

6 - For reference see additional population and dwelling unit estimates provided in population projection worksheet from Sonoma County.

7 - Institutional category includes schools, churches, rest homes, post office and golf course.

8 - Group Quarters Population includes Institutionalized and non-Institutionalized persons and assumes their water use is in the Commercial sector.

Data Prepared :	23-Jun-05	By: M. Maddaus
Revised:	20-Jul-10	By: M. Maddaus
	22-Jul-10	By: W. Maddaus
	24-Jul-10	By: C. Matyas

Definitions / Abbreviations

ABAG	Association of Bay Area Governments		HHS	household size	
DOF	Department of Finance		NA	not available	
DSS	Decision Support System Model		MF	multi family	
du	dwelling unit		MGD	million gallons per day	
FY	Fiscal Year		No.	number	
gcd	gallons per capita / per day		Pop	population	
gpd/a	gallons per day / per account		Res	residential	
gpd	gallons per day		SF	single family	
			UFW	unaccounted for water	

Water Use Data Input Sheet (Page 2)

Valley of the Moon Water Service Area[1]

Reconcile agency account billing data and census data

Total Dwelling Units in Census 2000 for Valley of the Moon by Census Tract

Single family		2000 Units	No. Buildings	Service Area Billing Accounts - Year 2000 [3]	Difference between billing and census data	Data Sources / Notes
1-detached		6,009	6,009			
Subtotal		6,009	6,009	6,020	12	*Billing accounts exceed estimate from the census*
Multi family						*When this happens some of the attached units and duplexes are classified by District as Single Family*
1-attached		623	311			*Assumes average of 2 units per account*
2-units		296	148			*Assumes average of 2 units per account*
3-4 units		588	168			*Assumes average of 3.5 units per account*
5 to 9 units		67	10			*Assumes average of 7 units per account*
10 to 19 units		145	10			*Assumes average of 15 units per account*
20 to 49 more units		60	2			*Assumes average of 50 units per account*
50 or more units		515	7			*Assumes average of 50 mobile home units per master meter*
mobile homes		587	12			*Meter for mobile home parks, assume 50 per park*
Subtotal		2,881	667	398	-269	*Must be more than one building on an MF meter.*
	MF Average =	4.3	2000 Census Data units/building	7.2	2000 Billing Data units/account	This is a typical value of DUs/account
	Total SF + MF units =	8,889	Based on Sonoma MF units and Census SF units			

Alternatively the census tract breakdown of units may be in error. Assume County figures are correct.

	2000 Group Quarters Data		2000 Census Data
Institutionalized	117	Average household size	2.51
Non-Institutionalized	527	Average household size of a single family unit	2.74
Total	643	Average household size of a multifamily unit	2.15
		Homeowner vacancy rate (percent)	0.8%
		Rental vacancy rate (percent)	2.8%

Population and Household Size in Census 2000 for Valley of the Moon Water District

		Service Area	Estimated Population	Estimated Service Area Population	Data Sources / Notes	
		2000	**2005**	**2005**	*Estimated growth from 2000 to 2005 (Sonoma County Projections):*	*3.04%*
Total Population from Sonoma County data[6] =		22,050	22,785		*Estimated employment growth from 2000 to 2005:*	*3.32%*
Subtract Group Quarters Population =		117	120		*Water use for the institutionalized population is accounted for in nonresidential billing categories*	
Residential Population =		21,933	22,665		*DSS Model data based on the Sonoma County Draft General Plan 2005*	
Avg. Residential HHS[6]=		2.47	2.47			
MF Pop @ MF HHS[6] =	2.50	7,202	7,421	7,421	32.6%	*Percent of Population that is MF*
SF Pop =		14,732	15,244	15,244	66.9%	*Percent of Population that is SF*
SF HHS[6] =		2.41	2.49	120	0.5%	*Percent of Population that is Group Quarters*
			Total	22,785	100.0%	

Estimate Service Area Dwelling Units for 2005		
SF Res	6,124	*Equals No. of Single Family accounts for 2005*
MF Res	2,968	*Equals No. Dwelling Units plus growth in accounts*
Total	*9,092*	

4.3 Key Assumptions for the DSS Model

Table 3 shows the key assumptions used in the model. The assumptions having the most dramatic effect on future demands are the natural replacement rate of fixtures, how residential or commercial future use is projected, and finally the percent of estimated water losses.

Table 3
List of Baseline Demand Projection Assumptions for DSS Model

Valley of the Moon Water District List of Baseline Demand Projection Assumptions for DSS Model	
Parameter	**Model Input Value, Assumptions, and Key References**
Model Start Year	2005
Water Demand Factor Year(s)	Average of Years: 1997-2006
Peak Day Factor	1.65
Unaccounted for Water in the Start Year	13.1%
Population Projection Source	Sonoma County Draft General Plan 2005
Employment Projection Source	Sonoma County Draft General Plan 2005
Number of Water Accounts for Start Year	6764
Avoided Cost of Water $/AF (includes SCWA cost + $27.7 / AF for pumping cost)	$1,006
Distribution of Water Use Among Categories	Single Family: 67.1% Multifamily: 18% Business: 7.9% Irrigation Residential: 2.5% Irrigation Commercial: 0.5% Institutional: 4% New Single Family: 0%
Indoor Water Use by Category	Single Family: 56.3% Multifamily: 79.4% Business: 76.2% Irrigation Residential: 0% Irrigation Commercial: 0% Institutional: 46% New Single Family: 38.1%
Residential End Uses	AWWARF Report "Residential End Uses of Water" 1999
Non-Residential End Uses, %	AWWARF Report Commercial End Uses of Water" 1999
Efficient Residential Fixture Current Installation Rates	U.S. Census, Housing age by type of dwelling plus natural replacement plus rebate program (if any). Reference "High Efficiency Plumbing Fixtures - Toilets and Urinals" Koeller & Company July 23, 2005. Reference Consortium for Efficient Energy (www.cee1.org)
Water Savings for Fixtures, gal/capita/day	AWWARF Report "Residential End Uses of Water" 1999, , CUWCC Cost and Savings Study April 28, 2005, Agency supplied data on costs and savings, professional judgement where no published data availble
Non-Residential Fixture Efficiency Current Installation Rates	U.S. Census, assume commercial establishments built at same rate as housing, plus natural replacement
Residential Frequency of Use Data, Toilets, Showers, Washers, Uses/user/day	Falls within ranges in AWWARF Report "Residential End Uses of Water" 1999
Non-Residential Frequency of Use Data, Toilets and Urinals, Uses/user/day	Estimated based using AWWARF Report "Commercial and Institutional End Uses of Water" 1999
Natural Replacement Rate of Fixtures	Residential Toilets 3% (1.28 gpf toilets), 4% (1.6 gpf and higher toilets) Commercial Toilets 3% (1.28 gpf toilets), 4% (1.6 gpf and higher toilets) Residential Showers 4% Residential Clothes washers 6.7% A 3% replacement rate corresponds to 33 year life of a new fixture. A 6.67% replacement rate corresponds to 15 year washer life based on "Bern Clothes Washer Study, Final Report, Energy Division, Oak Ridge National Laboratory, for U.S. Department of Energy, March 1998, Internet address: www.energystar.gov
Future Residential Water Use	Increases Based on Population Growth
Future Non-Residential Water Use	Increases Based on Employment Growth

4.4 Water Demand Projections With and Without the Plumbing Code

Development of the Water Demand Projections Table and Graph

Water demand projections were developed to the year 2035 using the Demand Side Management Least Cost Planning Decision Support System (DSS) model. This model incorporates information from the:

- "Water Use Data Sheet" and the "Key Assumptions"
- Questions asked of agencies
- Contractor provided data
- 2000 Census data and 2006-08 American Community Survey 3 year estimates
- Local General Plans
- Association of Bay Area Governments Projections

Water demand projections were input for 30 years using the DSS Model. This model incorporates information from the:

- Contractor selected population and employment forecasts.
- Data provided by Valley of the Moon Water District staff including estimates for value of water saved, historical water use, past conservation efforts, and water system facilities.

Table 4 shows the projected demands with and without plumbing codes and appliance standards. This page includes both a table and a graph. Each will be described below.

National Plumbing Code

The Federal Energy Policy Act of 1992, as amended in 2005 requires only fixtures meeting the following standards can be installed in new buildings:

- Toilet – 1.6 gal/flush maximum
- Urinals – 1.0 gal/flush maximum
- Showerhead - 2.5 gal/min at 80 psi
- Residential Faucets – 2.2 gal/min at 60 psi
- Public Restroom Faucets - 0.5 gal/min at 60 psi
- Dishwashing pre-rinse spray valves – 1.6 gal/min at 60 psi

Replacement of fixtures in existing buildings is also governed by the Federal Energy Policy Act that requires only devices with the specified level of efficiency (shown above) can be sold today (2010). The net result of the plumbing code is that new buildings will have more efficient fixtures and old inefficient fixtures will slowly be replaced with new more efficient models. The national plumbing code is an important piece of legislation and must be carefully taken into consideration when analyzing the overall water efficiency of a service area.

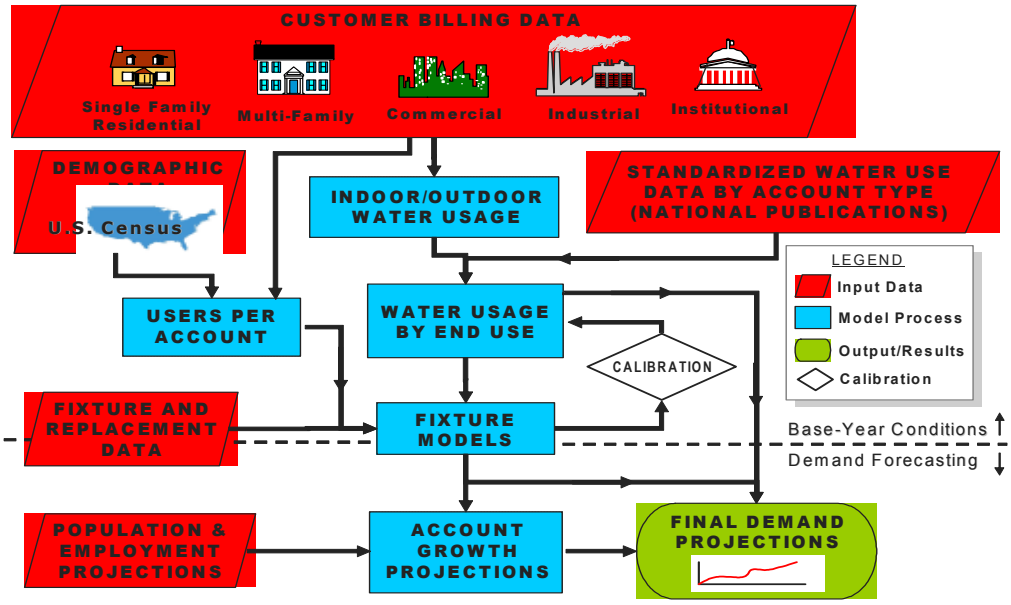
In addition to the plumbing code the US Department of Energy regulates appliances such as residential clothes washers. Regulations to make these appliances more energy efficient has driven manufactures to dramatically reduce the amount of water these efficient machines use. Generally horizontal axis washing machines use 30-50 percent less water than conventional models (which are still available). In the analysis for Valley of the Moon Water District, the DSS Model forecasts a gradual transition to high efficiency clothes washers (using 19 gallons or less) so that by the year 2020 this will be the only type of machines purchased. In addition to the industry becoming more efficient, rebate programs for washers have been successful in encouraging customers to buy more water efficient models. Given that machines

last about 15 years eventually all machines in the Valley of the Moon Water District area will be of this type.

State Plumbing Code

The Plumbing Code includes the new California State Law requiring High Efficiency Toilets and High Efficiency Urinals be exclusively sold in the state by 2014. Figure 6 below describes conceptually how the above listed items are incorporated into the flow of information in the DSS Model.

Figure 6
DSS Model Overview Used to Make Potable Water Demand Projection
"With the Plumbing Code"



Graph of projected demands (Figure 7)

Figure 7 shows the potable water demand projection at five-year increments. The graph shows projections for demand with and without the plumbing code through 2035.

Table of water demand projections (Table 4)

The table of water demands projections includes:

1. The water demand projections shown in Table 4 are based on the future population and employment projections provided in Table 1 and Table 2.
2. Projections were made *with and without* the plumbing codes.
3. Projections are for potable water only. It does not include recycled water use. Recycled water use and projections are included in a separate Chapter of the UWMP.

Dry Year Demands

The demand projections reflect average weather conditions and **do not** reflect drier and hotter drought conditions. Climate change, which might alter weather patterns, either increased or decreased rainfall, and possibly increased irrigation demand in the spring and fall due to a warmer climate have also not been addressed in this analysis.

Figure 7
Potable Water Use Projections for Valley of the Moon Water District

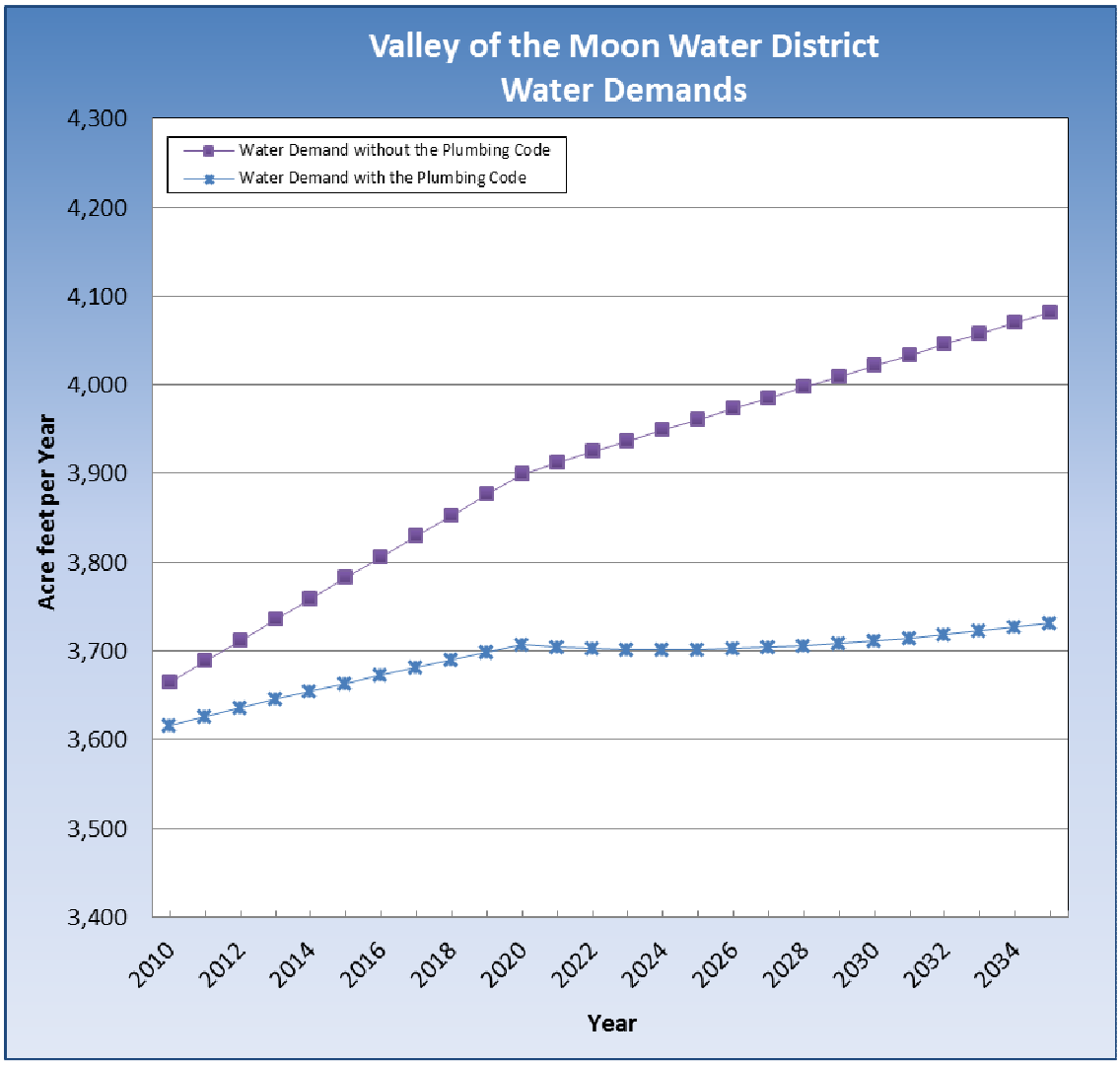


Table 4
Potable Water Use Projections for Valley of the Moon Water District

Valley of the Moon Water District Water Demands						
Water Demand (AFY)	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Water Demand without the Plumbing Code	3,665	3,782	3,900	3,961	4,021	4,082
Water Demand with the Plumbing Code	3,616	3,664	3,707	3,702	3,711	3,732

*Data is not weather normalized. Total Water use is potable only. Does not include recycled water use. Recycled water use and projection are in a separate section in the UWMP.

4.5 Water Demand Projections – 2005 Urban Water Management Plan (UWMP) Format

The 2010 Urban Water Management Plan Guidance Document from the California Department of Water Resources is not planned to be released until after December 2010. Without the guidance document, the exact formatting of the tables for the 2010 UWMP are not known. Therefore, it was elected to place the demand data into the 2005 UWMP format.

Conversion of the Water Demand Projections Table and Graph to 2005 UWMP Format

The 2005 Urban Water Management Plan Guidance Document from the California Department of Water Resources (Ca DWR) requests that future demand information be in a specific format. Provided below are the five tables relating to future average day demands they requested. The demand projection shown is the "with Plumbing Code" demands and is otherwise the same as Table 4 and Figure 7. The demand projections in the Urban Water Management Plan appeared in the required DWR tables 2, 12, 13, 14, and 15 (2005 Plan requirement table numbers).

Urban Water Management Plan Tables for of 2005 UWMP

Table 5 below provides population projections for Valley of the Moon Water District service area.

Table 5 (DWR Table 2) Population – Current and Projected

Valley of the Moon Water District	
Year	**Population**
2010	23,478
2015	24,174
2020	24,873
2025	25,229
2030	25,586
2035	25,943

Current and Future Water Use by Customer Type

The current and projected number of connections and deliveries to the District's water distribution system, by sector are identified below on Table 6.

Table 6 (DWR Table 12) Current and Projected Water Deliveries

Valley of the Moon Water District Demands and Accounts By Customer Category (Based on Demand with Plumbing Code, excluding UFW)									
Year		**Single Family**	**Multifamily**	**Business**	**Irrigation Residential**	**Irrigation Commercial**	**Institutional**	**New Single Family**	**Total**
2010	**Number of Accounts**	6,124	425	170	18	11	33	186	6,968
	Deliveries AF/Y	2,047	559	242	77	17	124	76	3,142
2015	**# of accounts**	6,124	438	176	18	12	33	374	7,173
	Deliveries AF/Y	2,014	557	241	77	18	124	153	3,184
2020	**# of accounts**	6,124	450	181	18	12	33	561	7,379
	Deliveries AF/Y	1,979	553	240	77	19	124	229	3,221
2025	**# of accounts**	6,124	457	184	18	12	33	657	7,485
	Deliveries AF/Y	1,947	544	238	77	19	124	269	3,217
2030	**# of accounts**	6,124	463	187	18	12	33	753	7,591
	Deliveries AF/Y	1,922	539	236	77	19	124	308	3,226
2035	**# of accounts**	6,124	470	190	18	13	33	849	7,696
	Deliveries AF/Y	1,904	537	236	77	19	124	347	3,244

Water Sales to Other Agencies

The Valley of the Moon Water District does not currently sell water to any other agency. According to Valley of the Moon Water District, all "outside sales" are local businesses and residents, and not to another agency.

Table 7 (DWR Table 13) Sales to Other Agencies

Valley of the Moon Water District Sales to Other Agencies	2010	2015	2020	2025	2030	2035
Water Distributed (AFY)	N/A	N/A	N/A	N/A	N/A	N/A

Unaccounted-for Water and Additional Water Use

For this project unaccounted for water is defined to be the difference between water produced and water sold to customers. Unaccounted-for water use normally includes unmetered water use such as for fire protection and training, system and street flushing, sewer cleaning, construction, system leaks, meter inaccuracy, and unauthorized connections. Unaccounted-for water can also result from meter inaccuracies. Unaccounted-for water is before the conservation programs and increases due to an increase in demand.

Table 8 (DWR Table 14) Additional Water Uses and Losses, AF/yr

Valley of the Moon Water District Unaccounted for Water	2010	2015	2020	2025	2030	2035
Unaccounted-for system losses (AFY)	473	480	486	485	486	488

Total Water Use

The total current and future water use for the system is shown in the table below.

Table 9 (DWR Table 15) Total Potable Water Use, AF/yr*

Valley of the Moon Water District Total Demand with Plumbing Code	2010	2015	2020	2025	2030	2035
Total Demand with Plumbing Code and UFW (AFY)	3,616	3,664	3,707	3,702	3,712	3,732

*Total Water use is potable only. Does not include recycled water use. Recycled water use and projection are in another section of the UWMP.

5. COMPARISON OF INDIVIDUAL CONSERVATION MEASURES

5.1 Selecting Conservation Measures to be Evaluated (Conservation Measure Screening)

An important step in updating the water conservation program is the review and screening of new water conservation measures. In 2005 a list of 75 potential conservation measures was developed by Maddaus Water Management from known technology that included devices or programs (e.g., such as a high efficiency toilet) that would save water if installed by a water retailer, contractor, or customer. These measures are considered to be beyond the Tier One measures. A description of the potential conservation measure was developed that addressed the methods through which the device or program will be implemented, including the distribution method, or mechanism, that would be used to activate the device or program.

A screening process was undertaken to reduce the number of measures to a more manageable number and to eliminate those measures that are not as well suited to the Marin-Sonoma County area as other potential measures. Each potential measure was screened based on four qualitative criteria (below), scored on a scale of 1 to 5, with 5 being the most acceptable, and 20 being the maximum possible number of points for all criteria. The screening was completed by local conservation professionals, in a one day meeting in July 2005, facilitated by Maddaus Water Management.

Qualitative Criteria

The rating group used the following criteria to evaluate the measures:

- **Technology/Market Maturity** – Refers to whether the technology needed to implement the conservation measure, such as an irrigation control device, is commercially available and supported by the local service industry. A measure was scored low if the technology was not commercially available or high if the technology was widely available in the service area. A device may be screened out if it is not yet commercially available in the region.
- **Service Area Match** – Refers to whether the measure or related technology is appropriate for the area's climate, building stock, or lifestyle. For example, promoting Xeriscape gardens for multi-family or commercial sites may not be appropriate where water use analysis indicates little outdoor irrigation. Thus, a measure scored low in this category if it was not well suited for the area's characteristics and could not save water. A measure scored high in this criterion if it was well suited for the area and could save water.
- **Customer Acceptance/Equity** – Refers to whether retail customers within the wholesale customer service area would be willing to implement and accept the conservation measures. For example, would retail customers attend homeowner irrigation classes and implement lessons learned from these classes? If not, then the water savings associated with this measure would not be achieved and a measure with this characteristic would score low for this criterion. This criterion also refers to retail customer equitability (i.e., one category of retail customers receives benefit while another pays the costs without receiving benefits). Retail customer acceptance may be based on:
    - Convenience
    - Economics
    - Perceived fairness
    - Aesthetics
- **Relative Effectiveness of Measure Available** – Refers to the selection of the most effective measure if alternate conservation measures address the same end use (example – irrigation for single family customers). If the measures are equally effective the most appropriate was selected (e.g., the measure that was easier or less expensive to implement).

Measures with low scores were eliminated from further consideration, while those with high scores passed into the next evaluation phase (cost-effectiveness analysis using the DSS Model). To reduce the list to a more manageable number, normally a score of 17 or more was necessary to pass. The process reduced the measures to be evaluated further down to 22 new measures in addition to the 10 Tier One measures.

Upon inspection of the overall list of new measures it became apparent that some measures could be combined and others could be separated into two categories as follows:

- Measures that were voluntary and incentive based
- Measures that were regulatory and applied to new development only

This division was used to create two lists of measures that could be evaluated separately. Tier Two targets various types of customers and offers a range of incentives to enhance participation. New Development measures were originally targeted at single family homes (including town homes and

condos), as this category represents the largest category of new development with the most water savings potential.

The following table presents the measure descriptions that were originally analyzed as part of the 2005 study for "Tier 2" and "New Development" (ND) as well as the new measures that the contractors selected for this analysis. We have not modified the Tier 2 and New Development measure descriptions from their original description other than to add information for Cal Green, SB 407, and the Model Water Efficient Landscape Ordinance. The Tier 1 measures follow the definition of the CUWCC BMPs.

Cal Green (New Development Building Code): MWM added the Cal Green requirements that effect all new development in the State of California after January 1, 2011. MWM modeled water savings from the Cal Green building code by adding Multifamily and Commercial customer categories as appropriate to the following six measures: Tier 2 – 13 (Urinals), ND 1 (Rain Sensors), ND 2 (Smart Controllers), ND 3 (HETs), ND 7 (High Efficiency Faucets and Showerheads) and ND 8 (Landscape Requirements). As this is a new development law and based on discussions with contractors it was assumed actual water savings seen by contractor would begin to occur in the year 2012. The new development ordinances for each contractor are listed in Table 10.

SB 407 (Plumbing Fixture Retrofit on Resale or Remodel): MWM included the new California Law SB 407 to the measure description table and in all of the contractors' models as a new measure. In the model MWM worked carefully such that SB 407 takes into account the overlap with the plumbing code (natural replacement), Cal Green and rebate programs (such as through Tier 2-10 Toilets). SB 407 begins from the year 2017 in residential and 2019 in commercial properties. SB 407 program length continues until all the older high flush toilets have been replaced in each service area.

Tables 11, 12, 13 and 14 summarize the new measures selected for each contractor. Note that measures Tier 2-8, Tier 2-9 and Tier 2-11 were removed from this program at the request of all the contractors on August 2, 2010 for the following reasons:

- Measure Tier 2-8 was removed because new development regulations have changed significantly since this measure was analyzed in 2005 and the regulations require higher efficiency fixtures than this measure.
- Measure Tier 2-9 was removed as rebates for installing synthetic turf are incorporated into Measure Tier 2-2, Cash for Grass.
- Measure Tier 2-11 was removed because this measure is not cost-effective.

The removed measures are included in Table 13 for reference purposes only, but were not included in any of the DSS Model or any of the quantitative water saving calculations.

Table 10
New Development Ordinances

New Development Ordinances								
ND Measure	NMWD	City of Rohnert Park[1]	City of Cotati[2]	City of Santa Rosa	Town of Windsor	City of Sonoma	Valley of the Moon WD	Draft Cal Green Requirement
Applicability (Customer Classes)	All	All	All	All	All	All	All	All
ND1-Rain Sensor Retrofit	2005	No	No	2010	2010 (SF>4 lots) & >2,500 sq ft/lot	No	2010, SF>5,000 sq ft	No
ND2-Smart Irrigation Controller	2005	No	2010	2010	2010 (SF>4 lots) & >2,500 sq ft/lot	No	2010, SF>5,000 sq ft	Yes
ND3- High Efficiency Toilets	2005	No	2009	2011	No	No	No	Yes
ND4-Dishwasher New Efficient	2005	No	2009	No	No	No	No	No
ND5-Clothes Washing Machine Requirement	2000	No	2009	No	No	No	No	No
ND6-Hot Water on Demand	No	No	No	No	No	No	No	No
ND7-High Efficiency Faucets and Showerheads	2006	No	2009	2011	No	No	No	Yes
ND8-Landscape and Irrigation Requirements	2004	2010 (State ordinance)	2010	SF since 2007. All other since 1993	2011 for landscapes > 2,500 sq ft (applies to all but SF<5 lots)	2010 (adopted ordinance planned to be adopted September 1, 2010, budgets w/ 60% ET	2010 for All except SF<5,000 sq. ft. and turf<600 sq ft	Yes
Urinals	2008	No	No	2011	No	2009	No	Yes
Source	NMWD Reg 15	Use Build it Green Checklist (Mandatory)	Use Build it Green Checklist (Mandatory)	Adopting Cal Green 2010	Adopting Landscape ordinance June 2010	Use Build it Green Checklist (Mandatory)	County ordinance effective Jan 1, 2010	State Reqmt; May take effect 2012

[1]City of Rohnert Park has extensive green building ordinance requiring developers to select from a set of green building measures including some of the listed measures.
[2]City of Cotati ND-3 confirmed to start in 2009 based on July 27, 2010 with City of Cotati at the request of Damien O'Bid. Build It Green Checklist mandatory, beginning in 2004. The year 2009 was selected as a start date for 100% deployment of measures, as the measures can be selectively deployed providing the overall point minimum is achieved.

Table 11
Cal Green Building Code

Cal Green Building Code						
Building Class	**Component**	**Effective Date[i]**	**Indoor Fixtures Included**	**Indoor Requirement**	**Landscaping & Irrigation Requirement**	**Are the Requirements**
Residential	Indoor	1/1/2011	Toilets, Showers, Lavatory & Kitchen Faucets, Urinals	Achieve 20% savings overall below baseline		Yes
	Outdoor	1/1/2011			Provide weather adjusting controllers	Yes
Non Residential	Indoor	1/1/2011	Submeter leased spaces	Only if building >50,000 sq. ft. & if leased space use >100 gpd		Yes
			Toilets, Showers, Lavatory & Kitchen Faucets,	Achieve 20% savings overall below baseline		Yes
	Outdoor	1/1/2011			Provide water budget	> 1,000 sq ft. landscaped area
					Separate meter	As per Local or DWR ordinance
					Prescriptive landscaping requirements	> 1,000 sq ft. landscaped area
					Weather adjusting irrigation controller	Yes

[i] Effective date is 7/1/2011 for toilets

Table 12
Tier One Conservation Measures Evaluated in the DSS Model

Measure Number	Original CA BMP Number	Target Customer Category	Measure	Description
1	1	RSF, RMF	Residential Water Surveys - Indoor	This is the indoor component of indoor and outdoor water surveys for existing single-family and multi family residential customers. Normally those with high water use are targeted and provided customized report to homeowner.
2	1	RSF, RMF	Residential Water Surveys - Outdoor	This is the outdoor component of indoor and outdoor water surveys for existing single-family and multi family residential customers. Normally those with high water use are targeted and provided customized report to homeowner.
3	2	RSF, RMF	Residential Retrofit	Provide owners of pre-1992 homes with retrofit kits that contain easy-to-install low flow showerheads, faucet aerators, and toilet tank retrofit devices, until saturation reaches 75%.
4	5a	IRR	Water Budgets	90% of all irrigators of landscapes with separate irrigation accounts would receive a monthly or bi-monthly irrigation water use budget.
5	5b	IND	Large Landscape Conservation Audits	All public and private irrigators of landscapes larger than one acre would be eligible for free landscape water audits upon request.
6	6	RSF	Clothes Washer Rebate	Homeowners would be eligible to receive a rebate on a new water efficient clothes washer.
7	7	RSF, NRSF	Public Information Program	Public education would be used to raise awareness of other conservation measures available to customers. Programs could include poster contests, speakers to community groups, radio and television time, and printed educational material such as bill inserts, etc.
8	9	COM	Commercial Water Audits	High water use accounts would be offered a free water audit that would evaluate ways for the business to save water and money.
9	14	RSF	Single Family Residential ULF Toilet Rebate	Homeowners would be eligible to receive a rebate to replace an existing high volume toilet with a new water efficient toilet.
10	14	RMF	Multi family Residential ULF Toilet Rebate	Homeowners would be eligible to receive a rebate to replace an existing high volume toilet with a new water efficient toilet.

Notes:

RSF = Residential Single Family RMF = Residential Multi Family NRSF = New Residential Single Family

COM = Business INS = Institutional IND = Industrial

Table 13
Tier Two and New Development Conservation Measures Evaluated in the DSS Model

Measure Number	Name of Measure	Target Customer Category	Description
Tier 2-1	Rain-sensor (shut off device) retrofit on irrigation controllers	Existing Customers SF	Agency pays for the rain sensor, homeowner pays for the optional installation ($35).
Tier 2-2	Cash for Grass (turf removal program)	Existing Customers SF, MF, CII	Provide a rebate for customers who remove irrigated turf grass and replace it with low water using plants. The rebate would require that an appropriate irrigation system be installed for the replacement landscaping. Limited to $500 rebate at $1.00 per square foot.
Tier 2-3	Financial Incentives for Being Below Water Budget	All Dedicated Irrigation Meter customers	For dedicated irrigation customers, link a landscape water budget to a retail water agency's rate schedule so that the dedicated irrigation meter customer pays less when their water use is at or under their water budget.
Tier 2-4	Financial Rebates for Irrigation Meters	Existing CII Customers with mixed water use (indoor and outdoor)	Provide financial incentives/rebates for selected permits and equipment to convert mixed use meters to a separate dedicated irrigation meter. Model implementation program after City of Santa Rosa's Service Split program. Utility will provide a water budget for the new irrigation meter.
Tier 2-5	Smart Irrigation Controller Rebates	Existing Customers SF, MF, CII, IRR	Provide an up to $450 rebate for the purchase of a SMART irrigation controller and associated signal fees (up to $150). Assume one controller for RSF and two for others. Minimum participant requirements: at least 500 sq. ft. of well maintained turf irrigated with an automatic irrigation control system.
Tier 2-6	Financial Incentives/ Rebates for Irrigation Upgrades	Existing Customers MF, CII, IRR, and SF for some contractors if requested as a new measure	For MF & CII customers with landscape provide rebates for selected types of irrigation equipment upgrade including rain sensors, rain harvesting, and grey water. Each contractor can include any equipment desired and allow the customers to select the items they prefer up to the maximum rebate value per customer. Water savings assumes a mixture of many different irrigation technologies. Model program after water agencies such as EBMUD or Contra Costa Water District or Santa Rosa.
Tier 2-7	Hotel retrofit (w/financial assistance) - CII Existing	Existing Customers: CII	Following a free water audit, offer the hotel a rebate for equipment identified that would save water. Provide a rebate schedule for certain efficient equipment such as air-cooled ice machines, steamers, washers, cooling towers, and spray rinse valves.
Tier 2-8 **MEASURE REMOVED FROM 2010 ANALYSIS**	Offer new accounts reduced connection fees for installing efficient process equipment for selected businesses (restaurants, laundry mat, food/groceries and hospital)	New Customers: CII	Offer reduced water and sewer connection fees to new facilities to install water efficient equipment in new facilities that goes above and beyond the building code requirements. Model program after Santa Rosa's BAT program.

Measure Number	Name of Measure	Target Customer Category	Description
Tier 2-9 **MEASURE REMOVED FROM 2010 ANALYSIS**	Synthetic Turf Rebate	Existing Customers: SF (North Marin only) , IRR	Provide a rebate for replacing existing turf with synthetic turf. Market program to all irrigation customers and single family for North Marin only.
Tier 2-10	High Efficiency Toilet (HET)	Existing Customers: SF & MF	Provide a rebate or voucher for the installation of a high efficiency toilet (HET). HET are defined as any toilet to flush 20% less than an ULFT and include dual flush technology. Rebate amounts would reflect the incremental purchase cost.
Tier 2-11 **MEASURE REMOVED FROM 2010 ANALYSIS**	Dishwasher New Efficient	Existing Customers: SF	Provide a rebate to encourage homeowners to replace old inefficient dishwashers with new efficient dishwashers (meeting certain water efficiency standards, such as gallons/load).
Tier 2-12	CII Rebates - replace inefficient water using equipment	Existing Customers: CII	Provide a rebate for a standard list of water efficient equipment. Included would be x-ray machines, icemakers, air-cooled ice machines, steamers, washers, spray valves, efficient dishwashers, replace once through cooling, add conductivity meters on cooling towers, etc.
Tier 2-13	0.5 gal/flush urinals in new buildings	New Customers: CII	Require that new buildings be fitted with 0.5 gpf or less urinals rather than the current standard of 1.0-gal/flush models.
ND1	Rain-sensor shut off device on irrigation controllers	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require-sensor or rain shut off devices with all new automatic irrigation system installations on new homes.
ND2	Smart Irrigation Controller	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require developers to provide the latest state of the art SMART irrigation controllers. These SMART controllers have on-site temperature sensors or rely on a signal from a central weather station that modifies irrigation times at least weekly.
ND3	High Efficiency Toilet (HET)	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require new single family and multifamily residents to install a high efficiency toilet (HET). HET are defined as any toilet to flush 20% less than an ULFT and include dual flush technology.
ND4	Dishwasher New Efficient	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require new single-family residents to install an efficient dishwasher (meeting certain water efficiency standards, such as gallons/load).
ND5	Clothes washing machines requirement for new residential	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Building departments would be responsible to ensure that an efficient washer was installed before new home occupancy.

Measure Number	Name of Measure	Target Customer Category	Description
ND6	Hot Water on Demand	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require developers to equip new homes with a hot water on demand system or tankless hot water heaters, such as those made by Metland Systems and others. These systems use a pump placed under the sink to recycle water sitting in the hot water pipes to the water heater.
ND7	High efficiency faucets and showerheads	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require developers to install Lavatory faucets that flow at no more than 1.5 gpm, kitchen faucets at 2.2 gpm, showerheads at 2.0 gpm
ND8	Landscape and irrigation requirements	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Enforce a regulation that specifies that homes be landscaped according to Xeriscape principals and the Model Water Efficient Landscape Ordinance, with appropriate irrigation systems. (Combines with Smart Controller listed above). Goal is overall 25% reduction in irrigation water use.
New Measure	SB 407	Existing: SF, MF and CII	Measure will start in the year 2017 for SF accounts and 2019 for MF and CII accounts to coincide with the California State Law SB 407. The law includes working with the real estate industry to require a certificate of compliance be submitted to the District stating that, when a property is sold, information on whether or not indoor water fixtures are efficient was disclosed to the buyer.
Potential New Measure Selected by One or More Contractors	Rainwater harvesting	New Customers SF; Existing SF, MF	Provide a rebate ($100 RSF and $200 RMF) to assist a certain percentage of single family homeowners per year with installation of rain barrels or cisterns.
Potential New Measure Selected by One or More Contractors	Grey Water System Rebate	New Customers SF; Existing SF	Provide a rebate (up to $500) to assist a certain percentage of single family homeowners per year to install gray water systems. Parts cost approx $200, installation is approx $400-$500
Potential New Measure Selected by One or More Contractors	Tiered Water Rates	Existing Customers: SF, MF, CII	Change Rate Structure to an inclining block rate and increase prices significantly periodically to maintain savings, such as every ten years.
Potential New Measure Selected by One or More Contractors	Submetering and Consumption Billing of Apartments and Mobile Homes	New Customers: MF	Require installation of submeters on all new MF and mobile home accounts unless the building has a central, circulating hot water system (which precludes a meter on all water going to each unit).

RSF = Residential Single Family RMF = Residential Multi Family NRSF = New Residential Single Family

COM = Business INS = Institutional IND = Industrial

Table 14
New Conservation Measures Evaluated in the DSS Model

New Conservation Measures for Analysis (New for the 2010 analysis)							
Measure	City of Cotati	North Marin Water District	City of Rohnert Park	City of Santa Rosa	City of Sonoma	Valley of the Moon Water District	Town of Windsor
Rainwater Harvesting Rebate				✓			
Grey Water System Rebate				✓		✓	
Tiered Water Rates (Conservation Pricing)	✓				✓		
Submetering and Consumption Billing of Apartments and Mobile Homes - New and Existing			✓				
Add CII to New Develoment Requirements	✓	✓					✓
SB407 - Retrofit of High Efficiency Fixtures	✓	✓	✓	✓	✓	✓	✓
Add SF Residential to Irrigation System Upgrades (T2-6)		✓			✓	✓	✓

5.2 Perspectives on Benefits and Costs

The determination of the economic feasibility of water conservation programs depends on comparing the costs of the programs to the benefits provided. The analysis was performed using the DSS Model. The DSS Model calculates savings at the end-use level; for example, the model determines the amount of water a toilet rebate program saves in daily toilet use for each single family account.

Present value analysis using constant 2010 dollars and a real discount rate of 3% is used to discount costs and benefits to the base year. From this analysis, benefit-cost ratios of each measure are computed. When measures are put together in programs, the model is set up to avoid double counting savings from multiple measures that act on the same end use of water. For example, multiple measures in a program may target toilet replacements. The model includes assumptions to apportion water savings between multiple measures.

Economic analysis can be performed from several different perspectives, based on which party is affected. For planning water conservation programs for utilities, the perspectives most commonly used for benefit-cost analyses include the utility and the community. The "utility" benefit-cost analysis is based on the benefits and costs to the water provider. The "community" benefit-cost analysis includes the utility benefit and costs together with account owner/customer benefits and costs. These include customer energy and other capital or operating cost benefits plus costs of implementing the measure, beyond what the utility pays.

The utility perspective offers two advantages for this analysis. First, it considers only the program costs that will be directly borne by the utility. This enables the utility to fairly compare potential investments for saving and supplying water. Second, because revenue shifts are treated as transfer payments, the analysis is not complicated with uncertainties associated with long-term rate projections and retail rate design assumptions. Because it is the water provider's role in developing a conservation plan that is paramount in this study, the utility perspective was primarily used to evaluate elements of the plan.

The community perspective is defined to include the utility and the customer costs and benefits. Costs incurred by customers striving to save water while participating in conservation programs are considered, as well as the benefits received in terms of reduced energy bills (from water heating costs) and wastewater savings, among others. Other factors external to the utility, such as environmental effects and climate change, are not included in the benefit-cost analysis. Because these external factors are often difficult to quantify and are not necessarily under the control of the utility, they are therefore frequently excluded from economic analyses, including this one.

5.3 Present Value Parameters

The time value of money is explicitly considered. The value of all future costs and benefits is discounted to 2005 (the model start year) at the real interest rate of 3.0%. The DSS Model calculates this real interest rate, adjusting the current nominal interest rate (assumed to be approximately 6.1%) by the assumed rate of inflation (3.0%). Cash flows discounted in this manner are herein referred to as "Present Value" sums.

5.4 Assumptions about Measure Costs

Costs were determined for each of the measures based on industry knowledge, past experience and data provided by the Valley of the Moon Water District. Costs may include incentive costs, usually determined on a per-participant basis; fixed costs, such as marketing; variable costs, such as the costs to staff the measures and to obtain and maintain equipment; and a one-time set-up cost. The set-up cost is for measure design by staff or consultants, any required pilot testing, and preparation of materials that will be used in marketing the measure. Measure costs were estimated for 30 years, (each year between 2005 and 2035). Costs were spread over the time period depending on the length of the implementation period for the measure and estimated voluntary customer participation levels.

Lost revenue due to reduced water sales is not included as a cost because the conservation measures evaluated herein generally take effect over a span of time that is sufficient to enable timely rate adjustments, if necessary, to meet fixed cost obligations.

5.5 Assumptions about Measure Savings

Data necessary to forecast water savings of measures include specific data on water use, demographics, market penetration, and unit water savings. Savings normally develop at a measured and predetermined pace, reaching full maturity after full market penetration is achieved. This may occur three to ten years after the start of implementation, depending upon the implementation schedule.

5.6 Assumptions about Avoided Costs

The most expensive source of water for almost all of the contractors, and in some cases the only source of water is the SCWA Russian River Supply. The price of the water to the contractors is set by SCWA every year and varies by contractor location, depending upon which aqueduct they draw from. Since 1990 the annual price of water has increased significantly. The annual rate of increase for 1989/1990 to 2010/11 has varied from 4.5 to 5.1% per year depending upon the aqueduct.

Since 1990 the annual rate of inflation has increased 2.64% per year in the San Francisco Bay Area, as measured by the Consumer Price Index (CPI). Based on this data the price of SCWA water has increased faster than the CPI.

Therefore in evaluating the benefit cost ratio of conservation measures and programs it is appropriate to consider the net increase in benefits (i.e., the net increase in the avoided cost of water). Other costs, such as the cost of conservation will increase presumably at the CPI rate. Also the cost of conservation programs will be paid for with inflated dollars.

For this evaluation the avoided costs were escalated from the 2010/11 value to a projected 2025/26 value (15 years). The cost escalated was the 2010/11 current price plus a distribution cost of $27.70 per acre-foot taken from pumping costs documented by North Marin Water District, which was the only contractor that had pumping costs readily available, and used for all contractors.

The net increase and the avoided costs used in this evaluation are listed below:

- Santa Rosa aqueduct contractors - 1.86% per year escalation or $ 832 per acre-foot
- Petaluma aqueduct contractors - 1.81% per year escalation or $ 827 per acre-foot
- Sonoma aqueduct contractors - 2.43% per year escalation or $1,006 per acre-foot
- Windsor was escalated at the Santa Rosa rate to $ 991 per acre-foot

This has the effect of raising the benefit-cost ratios in our evaluation by the amount that is roughly the percentage difference in the future vs. the current price of SCWA water. In our opinion this escalation represents a more realistic comparison of benefits and costs of conservation.

5.7 Measure Assumptions including Unit Costs, Water Savings, and Market Penetrations

Appendix A includes assumptions in the DSS Model for each of the following variables for all measures modeled:

- *Targeted Water User Group; End Use* – Water user group (e.g., single-family residential) and end use (e.g., indoor or outdoor water use).
- *Utility Unit Cost (for contractor)* – Cost of rebates, incentives, and contractors hired (by the utility) to implement measures.
- *Retail Customer Unit Cost* – Cost for implementing measures that is paid by retail customers (i.e., the remainder of a measure's cost that is not covered by a utility rebate or incentive).
- *Utility Administration and Marketing Cost* – The cost to the utility administering the measure, including consultant contract administration, marketing, and participant tracking. The mark-up is sufficient (in total) to cover local agency conservation staff time and general expenses and overhead.

The unit costs vary according to the type of account and implementation method being addressed. For example, a measure might cost a different amount for a residential single family account, than a residential multi-family account, and for a rebate versus a direct installation implementation method. Typically water utilities have found that there are increased costs associated with achieving higher market saturation, such as more surveys per year. Appendix A shows the unit costs used in the study. The model calculates the annual costs based on the number of participants each year. The general formulas for calculating annual costs are:

Annual Utility Cost = Annual market saturation x total accounts in category x utility unit cost per account x (1+administration and marketing markup)

Annual Customer Cost = Annual number of participants x retail customer unit cost

Annual Community Cost = Annual utility cost + annual customer cost

5.8 Comparison of Individual Measures

Table 15 presents how much water the measures would save over 30 years, how much they would cost, and what cost of water saved is *if the measures were run on a stand-alone basis (i.e. without interaction or overlap from other measures that might address the same end use(s).* Only the net or highest water savings for overlapping conservation measures was included in each program.

Economic indicators are defined below:

- *Utility costs:* those costs that the utility would spend include measure set-up, annual administration, and payment of rebates or purchase of devices or services as specified in the measure design.
- *Customer costs:* those costs customers would spend to participate in Valley of the Moon Water District programs and maintaining its effectiveness over the life of the measure.
- *Community costs:* Community costs include utility and customer costs to implement measures.

The column headings in Table 15 are defined as follows:

- *Year 2035 Water Savings (AF/Yr)* = water savings in 2035 (AF/Yr) where AF/Yr = acre-feet per year.
- *Present Value of Water Utility Costs* = 30 year present value of the time stream of annual costs.
- *Utility Benefit-Cost ratio* = NPV of utility costs/NPV of utility benefits over 30 years.
- *Community Benefit-Cost ratio* = (NPV of Utility Benefits plus NPV of customer energy savings)/NPV of utility plus NPV of customer costs).
- *Utility Cost of Savings per Unit Volume ($/AF, by cost category)* = NPV of Category Costs divided by 30-year volume of water saved.
- *Total Utility Cost for Five Years 2011-2015* = Total cost in dollars to run the program for the years 2011 to 2015 (five years). This is a five year cost often useful for short term financial budgeting purposes.

Table 15
Conservation Measure Cost and Savings

Valley of the Moon Water District Conservation Measure Cost and Savings Measure Name	Year 2035 Water Savings (AFY)	Present Value of Water Utility Costs	Utility Benefit Cost Ratio	Community Benefit Cost Ratio	Utility Cost of Savings per Unit Volume ($/AF)	Total Utility Cost for Five Years 2011-2015
CUWCC #1a - Residential Water Surveys - Interior	2.7	$56,677	1.03	2.05	$646	$17,124
CUWCC #1b - Residential Water Surveys - Outdoor	5.1	$56,810	1.77	1.61	$371	$17,158
CUWCC #2 - Plumbing Retrofit Kits	7.3	$17,154	8.57	12.74	$77	$0
CUWCC #3 - System Water Loss Reduction	0.0	$2,101,053	0.71	0.71	$840	$812,500
CUWCC #5a - Large Landscape Water Budgets	18.8	$24,737	15.16	15.16	$44	$13,215
CUWCC #5b - Large Landscape Audits	3.6	$129,212	0.46	0.33	$1,375	$18,714
CUWCC #6 - Washer Rebates	2.5	$30,334	2.07	0.68	$327	$0
CUWCC #7 - Residential Public Education	21.3	$208,277	2.00	3.48	$329	$50,176
CUWCC #9 - Commercial Water Audits	22.8	$126,172	3.61	3.84	$182	$0
CUWCC #14a - RSF Toilet Replacement	0.0	$28,684	1.87	1.02	$370	$0
CUWCC #14b - RMF Toilet Replacement	0.0	$4,000	5.32	2.13	$131	$0
Tier 2 - 1 Rain Sensor Retrofit	6.5	$24,088	3.25	1.35	$176	$9,186
Tier 2 - 2 Cash for Grass	4.3	$56,225	1.23	0.69	$498	$25,347
Tier 2 - 3 Financial Incentives for Being Below Water Budget	18.2	$233,814	0.80	0.43	$689	$101,250
Tier 2 - 4 Irrigation Meter Rebates	1.0	$3,547	4.19	2.33	$142	$4,364
Tier 2 - 5a Smart Irrigation Controller Rebates - RSF	5.4	$162,466	0.39	0.33	$1,461	$89,561
Tier 2 - 5b Smart Irrigation Controller Rebates - RMF, CII, IRR	9.3	$116,412	0.93	0.85	$609	$78,206
Tier 2 - 6 Financial Incentives/Rebates for Irrigation Upgrades	12.2	$242,979	0.53	0.29	$1,049	$132,493
Tier 2 - 7 Hotel Retrofit	4.2	$2,705	16.11	6.19	$34	$1,445
Tier 2 - 10 High Efficiency Toilets	10.0	$275,097	0.57	0.33	$1,049	$348,467
Tier 2 - 12 CII Rebates - Replace Inefficient Water Using Equipment	0.3	$7,034	0.44	0.67	$1,271	$3,757
Tier 2 - 13 New Commercial Urinals	0.1	$558	3.90	0.43	$159	$686
Tier 2 - ND1 Rain Sensor Retrofit	13.5	$6,433	18.09	3.62	$30	$2,653
Tier 2 - ND2 Smart Irrigation Controller	22.6	$6,433	30.15	0.81	$18	$2,653
Tier 2 - ND3 High Efficiency Toilets	0.9	$2,761	4.86	0.21	$124	$3,397
Tier 2 - ND4 Dishwasher New Efficient	0.8	$5,804	1.13	0.27	$484	$2,573
Tier 2 - ND5 Clothes Washing Machine Requirement	11.4	$5,804	16.19	1.73	$34	$2,573
Tier 2 - ND6 Hot Water on Demand	10.9	$11,608	7.68	0.39	$71	$5,146
Tier 2 - ND7 High Efficiency Faucets and Showerheads	8.3	$6,327	10.62	7.13	$51	$2,771
Tier 2 - ND8 Landscape and Irrigation Requirements	15.5	$6,842	19.55	0.09	$28	$2,822
Grey Water Retrofit	15.2	$134,246	0.95	0.53	$569	$20,950
SB 407	4.2	$419	80.68	7.00	$6	$0

Note: some measures have a $0 Total Utility Cost from 2011 to 2015. That just indicates there are no costs in that particular 5 year period. It does not mean there is no activity before 2011 or after 2011. This column is meant to be helpful for budgeting purposes only.

6. RESULTS OF CONSERVATION PROGRAM EVALUATION

6.1 Selection of Measures for Programs

Table 16 provides a summary of which measures are included in each of the six draft alternative programs. The six packages are designed to illustrate a range of various measure combinations and resulting water savings.

These programs are not intended to be rigid programs but rather to demonstrate the range in savings that could be generated if selected measures were run together. In this step we account for a percent overlap in water savings (and benefits) and estimate combined savings and benefits from programs or packages of measures.

A description of each program evaluated follows. For most contractors Tier Two measures are modeled to commence in 2011. The only reason the measure would not start in 2011 is if an agency had submitted data showing activity in one of the Tier 2 programs from 2005 to 2009. Most agencies have shown significant activity on the Tier One measures since the model start year of 2005.

Program – Existing

Savings for the "Existing Program" include the measures that have been run during the time period of 2005 and 2009 as submitted by each individual contractor. For the Valley of the Moon Water District, the following measures were included:
Existing Program Conservation Measures:

Existing Program Conservation Measures:

- CUWCC #1 - Residential Water Surveys - Interior
- CUWCC #1 - Residential Water Surveys - Outdoor
- CUWCC #2 - Plumbing Retrofit Kits
- CUWCC #3 – System Water Loss Reduction
- CUWCC #5a - Large Landscape Water Budgets
- CUWCC #5b - Large Landscape Audits
- CUWCC #6 - Washer Rebates
- CUWCC #7 - Residential Public Education
- CUWCC #9 - Commercial Water Audits
- CUWCC #14 - RSF Toilet Replacement
- CUWCC #14 - RSF Toilet Replacement
- Tier 2 - ND1 Rain Sensor Retrofit
- Tier 2 - ND2 Smart Irrigation Controller
- Tier 2 - ND8 Landscape and Irrigation Requirements

Program – Existing + New Measures

Savings for the "Existing Program + New Measures" include the measures that have been run during the time period of 2005 and 2009 as submitted by each individual contractor in addition to the three new measures evaluated for each contractor. The new measures for each contractor are listed in Table 14.

Program – Tier One Measures

This program was designed to be the future program with full compliance for "Tier One Measures" including all the CUWCC BMPs. Program water savings includes actual achievements for the years 2005 to 2009 and then projected participation rates starting in 2011 in accordance with those specified in the California Urban Water Conservation Council's Memorandum Of Understanding, which may be higher (or lower) than you are currently achieving. If you continue to implement the BMPs as planned, your future demands will be reduced by the amount of savings from Tier One future measures.

Program - Tier One + New Development Measures

Savings for Tier One + New Development Measures were designed to isolate the effects of the New Development measures that would be implemented as well as the completion of Tier One measures. These eight New Development measures target new single family homes, multifamily homes, and commercial development based on the local ordinances or Cal Green as shown in Table 12 and 13.

Program – Tier One + Tier Two Measures

Savings for Tier One + Tier Two Measures includes 13 additional measures beyond the CUWCC BMPs. Tier One Future was designed to be the future program with full compliance for all the CUWCC BMPs. The participation rates starting in 2005 are in accordance with historical conservation efforts for the years 2005 to 2009. Then they proceed with the rate specified in the California Urban Water Conservation Council's Memorandum Of Understanding, which may be higher (or lower) than you are currently achieving. If you continue to implement these measures, your future water demands will be reduced by the amount of conservation savings. Descriptions of the Tier Two measures are in Table 13 and cost and saving assumptions for each individual measure can be found in Attachment A. Note that due to increased regulations and additional research and analysis on conservation measures, measures Tier 2-8, Tier 2-9 and Tier 2-11 were removed from this program at the request of all the contractors on August 2, 2010.

Program: Tier One, Tier Two, New Development

Savings for Tier One, Tier Two, and New Development includes all analyzed conservation measures except for the "new measures" because the new measures are unique to each contractor and did not go through the original measure screening process as the other measures in 2005. Also note that measures that either saved a small amount of water or were not cost-effective (Benefit-Cost ratio less than 1.0 and a high cost of water saved) were included here. Some of the Tier Two measures are small programs in that the target number of accounts is very small. So even though they appear to be relatively expensive from a measure point of view, their impact on the overall program costs and savings is relatively minor. Note that due to increased regulations and additional research and analysis on conservation measures, measures Tier 2-8, Tier 2-9 and Tier 2-11 were removed from this program at the request of all the contractors on August 2, 2010.

Table 16
Conservation Measures Selected for Programs

Measure Name	Program Existing	Program Existing & New	Program Tier 1	Program Tier 1 & Tier 2	Program Tier 1 & ND	Program Tier 1 & Tier 2 & ND
CUWCC #1a - Residential Water Surveys - Interior	✓	✓	✓	✓	✓	✓
CUWCC #1b - Residential Water Surveys - Outdoor	✓	✓	✓	✓	✓	✓
CUWCC #2 - Plumbing Retrofit Kits	✓	✓	✓	✓	✓	✓
CUWCC #3 - System Water Loss Reduction	✓	✓	✓	✓	✓	✓
CUWCC #5a - Large Landscape Water Budgets	✓	✓	✓	✓	✓	✓
CUWCC #5b - Large Landscape Audits	✓	✓	✓	✓	✓	✓
CUWCC #6 - Washer Rebates	✓	✓	✓	✓	✓	✓
CUWCC #7 - Residential Public Education	✓	✓	✓	✓	✓	✓
CUWCC #9 - Commercial Water Audits	✓	✓	✓	✓	✓	✓
CUWCC #14a - RSF Toilet Replacement	✓	✓	✓	✓	✓	✓
CUWCC #14b - RMF Toilet Replacement	✓	✓	✓	✓	✓	✓
Tier 2 - 1 Rain Sensor Retrofit				✓		✓
Tier 2 - 2 Cash for Grass				✓		✓
Tier 2 - 3 Financial Incentives for Being Below Water Budget				✓		✓
Tier 2 - 4 Irrigation Meter Rebates				✓		✓
Tier 2 - 5a Smart Irrigation Controller Rebates - RSF				✓		
Tier 2 - 5b Smart Irrigation Controller Rebates - RMF, CII, IRR				✓		
Tier 2 - 6 Financial Incentives/Rebates for Irrigation Upgrades				✓		
Tier 2 - 7 Hotel Retrofit				✓		✓
Tier 2 - 10 High Efficiency Toilets				✓		✓
Tier 2 - 12 CII Rebates - Replace Inefficient Water Using Equipment				✓		✓
Tier 2 - 13 New Commercial Urinals				✓		✓
Tier 2 - ND1 Rain Sensor Retrofit	✓	✓			✓	✓
Tier 2 - ND2 Smart Irrigation Controller	✓	✓			✓	✓
Tier 2 - ND3 High Efficiency Toilets					✓	✓
Tier 2 - ND4 Dishwasher New Efficient					✓	✓
Tier 2 - ND5 Clothes Washing Machine Requirement					✓	✓
Tier 2 - ND6 Hot Water on Demand					✓	✓
Tier 2 - ND7 High Efficiency Faucets and Showerheads					✓	✓
Tier 2 - ND8 Landscape and Irrigation Requirements	✓	✓			✓	✓
Grey Water Retrofit		✓				
SB 407 (Plumbing Retrofit on Resale or Remodel)		✓				

NOTE – Due to increased regulations and additional research and analysis on conservation measures, Measures Tier 2-8, Tier 2-9 and Tier 2-11 were removed from analysis at the request of all the contractors

6.2 Results of Program Evaluation

Figure 8 shows annual water demand with no conservation, plumbing code only, and the six programs. Table 17 shows the savings in 5 year increments for all six programs. The savings in Table 17 are just from the conservation programs alone and do not include the plumbing code savings. The separate starting points for the demand with and without the plumbing code versus the conservation programs is directly correlated to the fact that the contractors have existing conservation programs active from 2005 and 2009 that are already saving water by the year 2010.

Figure 8
Long Term Demands with Conservation Programs

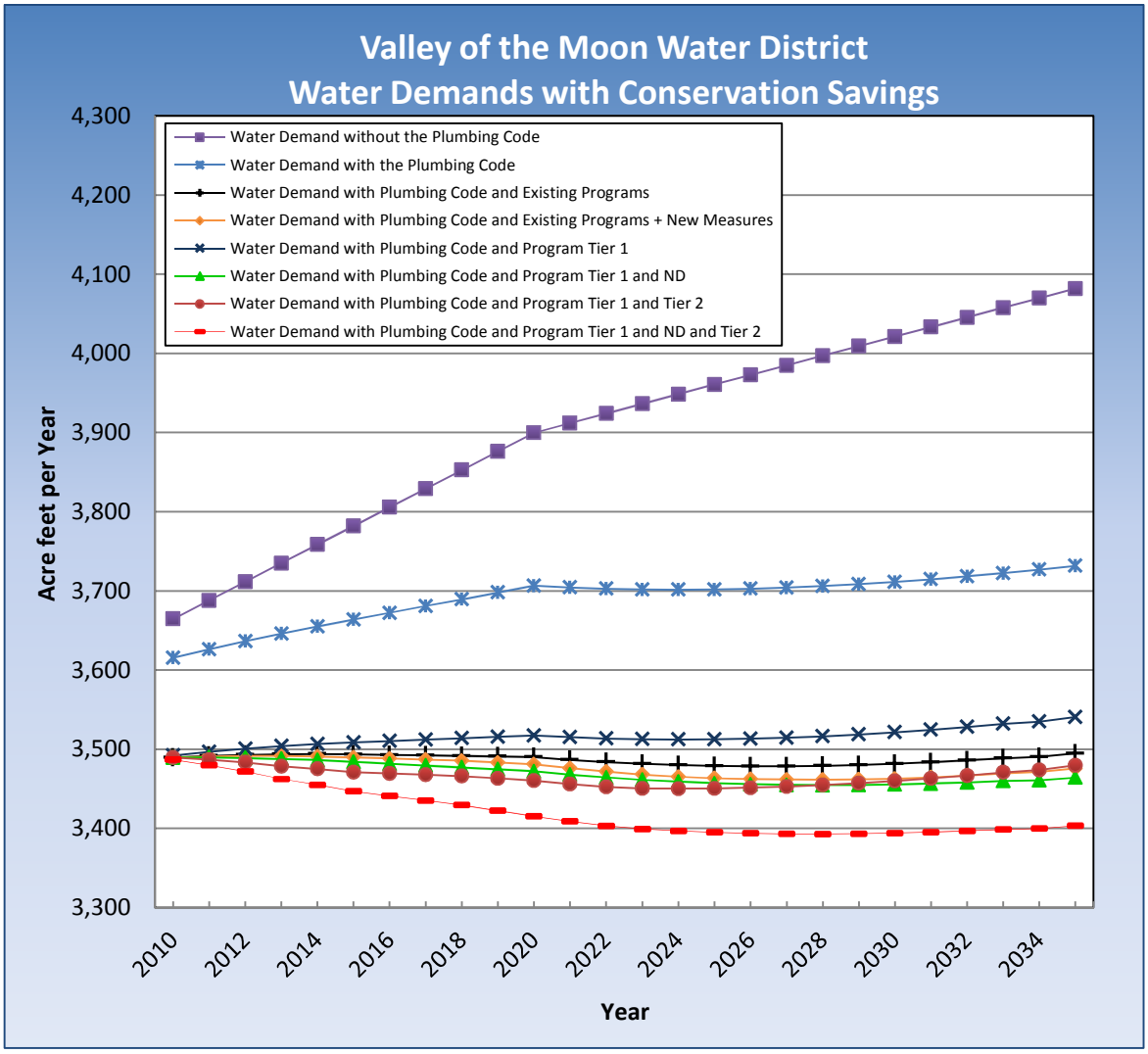


Table 17
Long Term Conservation Program Savings

Valley of the Moon Water District Water Conservation Savings								
Conservation Savings (AFY)	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Benefit Cost Ratio Utility**	**Benefit Cost Ratio Community**
Existing Programs	126	170	216	223	230	237	1.3	1.0
Existing Programs + New Measures	126	174	226	239	249	256	1.3	1.0
Program Tier 1	123	155	189	190	190	191	1.1	1.4
Program Tier 1 and ND	126	180	234	245	256	268	1.3	1.0
Program Tier 1 and Tier 2	126	193	246	252	252	252	1.0	1.1
Program Tier 1 and ND and Tier 2	128	217	291	307	317	328	1.1	0.8

Figure 9 shows how marginal returns change as more money is spent to achieve savings. As the figure shows the cost versus saving curve is starting to decline after Program Tier One + New Development. This means that the added cost of going from that Program to Tier One + Tier Two will save less water per unit expenditure. In other words there are diminishing returns when the curve starts to flatten out as

Tier Two measures are added to the program. It is clear that the New Development measures are more cost-effective to the utility than Tier Two measures. It is not to say that the Tier Two measures are a poor investment. The decision on which program is appropriate for each agency is dependent on many factors. Most recently it may be impacted by the goals set forth by SB7x-7 which calls for a reduction in per capita was use by 2020, which is independent of the economic analysis.

Figure 9
Present Value of Utility Costs versus Cumulative Water Saved

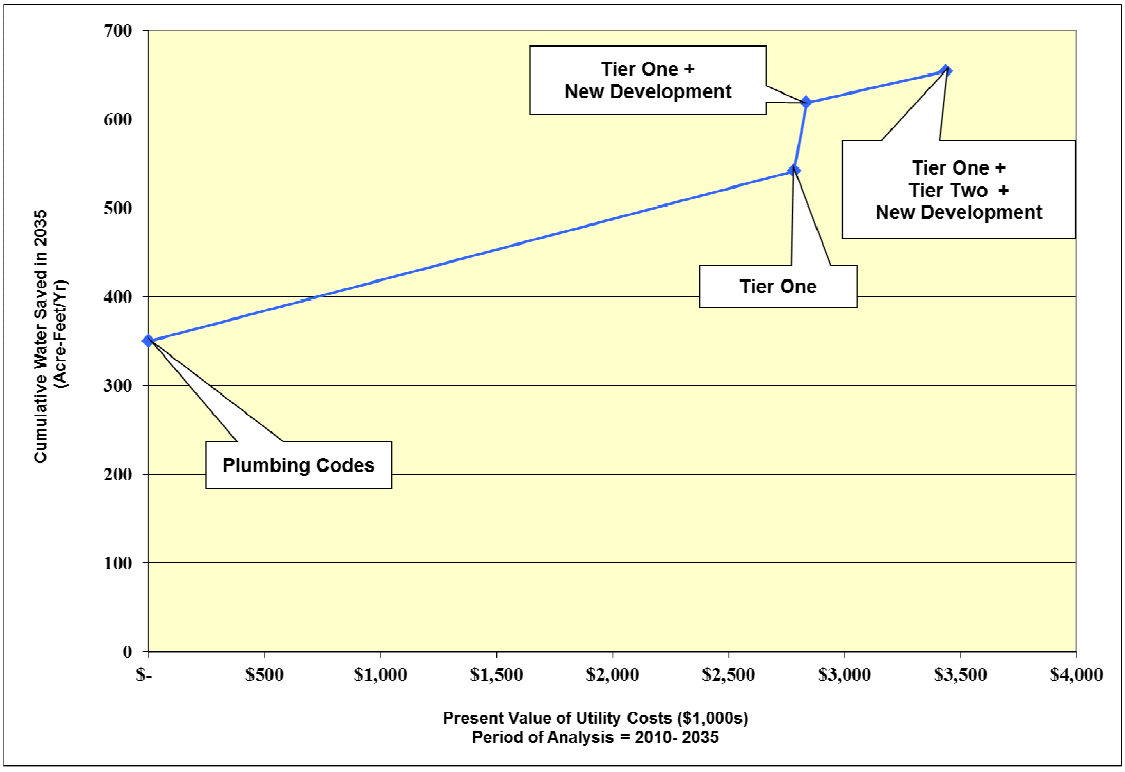


Table 18 presents key evaluation statistics compiled from the DSS Model. Assuming all measures are successfully implemented, projected water savings for 2030 in AF are shown, as are the costs of achieving this reduction. Water savings for programs have been shown for 2035 in Table 18.

The costs are expressed two ways.

1. Total present value over the analysis period,
2. The cost of water saved. Cost of water saved is presented two ways: for the utility and the total community (customer plus utility).

These cost parameters are derived from the annual time stream of utility, customer and community costs.

The water savings are expressed as a percentage of the projected 2035 demand. One column indicates the percentage of the new water demand in 2035 each program could provide. The new water needed by new customers over the full planning period is the difference between 2005 demand and 2035 demand without the plumbing code. The plumbing code is an additional savings that could be added on top of the water savings shown in Table 18. This allows the plumbing code savings percent and water savings in AF/Yr shown in Table 4 and to be additive to the conservation program savings in AF/Yr and percentages shown in Table 18.

Table 18
Comparison of Long-Term Conservation Programs – Utility Costs and Savings

Valley of the Moon Water District
Comparison of Conservation Program Costs and Savings

Conservation Program	Water Utility Benefit-Cost Ratio	Community Benefit-Cost Ratio	2015 Water Savings (AFY)	2035 Water Savings (AFY)	2035 Indoor Water Savings (AFY)	2035 Outdoor Water Savings (AFY)	Total Water Savings as a % of Total Production in 2035*	30 Year Present Value of Water Utility Costs ($1,000)	Total Utility Cost for Five Years 2011-2015 ($1,000)	Utility Cost of Water Saved ($/AF)
Existing Program	1.26	0.99	170	237	146	91	6.3%	$2,803	$937	$490
Existing Program + New Measures	1.26	0.98	174	256	150	106	6.9%	$2,937	$989	$488
Tier One	1.13	1.44	155	191	146	45	5.1%	$2,783	$929	$557
Tier One + Tier Two	0.99	0.95	193	252	160	92	6.8%	$3,908	$1,724	$621
Tier One + New Development	1.34	1.06	180	268	177	91	7.2%	$2,835	$953	$458
Tier One + Tier Two + New Development	1.14	0.83	217	328	191	138	8.8%	$3,960	$1,748	$529

Notes:

- Present Value is determined using an interest rate of 3%
- Cost of water saved is present value of water utility cost divided by total 30-year water savings.
- * % of water saved refers to the demand without the plumbing code
- Total water savings in 2035 as a percent of production is relative to no plumbing code production
- Conversion 1 MGD is equal to1120 AF/Yr

7. CONCLUSIONS

7.1 Relative Savings and Cost-Effectiveness of Programs

The Valley of the Moon Water District service area has a relatively high portion of residential water use and a significant amount of outdoor water use. Consequently, residential conservation programs produce the most savings. Valley of the Moon Water District's service area is not a heavy manufacturing sector so the conservation potential in the commercial sector is relatively low. Based on the assumed avoided cost of new water, water conservation programs are cost-effective. Overall conclusions are:

- The decrease in demand for the District compared to the water demand projections in the 2005 Demand and Water Conservation Measure Analysis completed by MWM was due to lower water factors for each customer category used to project the water use for each customer category. The water factors decreased for all contractors compared to the 2005 study.
- Water savings from implementation of the Tier One, Tier Two and New Development conservation programs would reduce water needs in 2035 by about 8.8 percent(328 AF/Yr as shown on Table 18) when compared to the 2035 water demand without the plumbing code.
- Water savings from implementation of the Tier One conservation programs would reduce water needs in 2035 by about 5.1 percent (191 AF/Yr) as shown on Table 18) when compared to 2035 water demands without the plumbing code.
- For most programs, more than half of the conservation potential in 2035 is in reducing outdoor use; the rest is indoor use reduction potential.
- The average cost of water saved over 30-years is lower than the current price of SCWA water. Thus measures that are cost-effective at today's water rates will be more so if SCWA rates rise in the future.
- Savings contributed by Tier Two measures alone are 61 AF/Yr in 2035.
- Savings contributed by the New Development measures alone are 77 AF/Yr in 2035.
- Benefit-cost ratios of program combinations range from 0.99 to 1.26 so all program combinations are cost-effective from the utility standpoint.
- The average cost of water saved for all of the programs from the utility standpoint (as shown on Table 18) is lower than the forecasted 2025 price of $1006 per AF.
- The cost for the new development measures is largely funded by the builders of the new homes, which tends to reduce the overall cost to the utility for all measures.

Appendix A - Assumptions for Water Conservation Measures Evaluated in the DSS Model

	BMP 1a Residential Audits	**BMP 1a Residential Audits**	**BMP 1b Residential Audits**	**BMP 1b Residential Audits**	**BMP 2 Plumbing Retrofits**	**BMP 3 System Audits & Leak Detection**
Account Category	RSF	RMF	RSF	RMF	RSF / RMF	NA
Affected End Uses	Internal	Internal	External	External	Toilets, Faucets, Showers	NA
Percent Reduction in Water Use	5%	5%	10%	10%	5%/5%/21%	3%
CUWCC MOU Sign-on Year	2001	2001	2001	2001	2001	2001
Evaluation Start Year	2005	2005	2005	2005	2005	2005
Required Interventions Starting in 2005 (Accounts)	908	60	908	60	364/32	NA
Market Penetration by End Of Program,%	15	15	15	15	75	100%
Measure Life (years)	7	7	7	7	Permanent	Permanent
Initial Cost	$ -	$ -	$ -	$ -	$ -	
Utility Unit Cost, per site one time cost	$40.00	$80.00	$40.00	$50.00	$30.00	$162,500/yr
Customer Unit Cost to achieve savings	$10.00	$30.00	$5.00	$20.00	$0	--
Administration Cost, percent of unit cost	25%	25%	25%	25%	10%	--
Affected Units	dwelling unit	dwelling unit	dwelling unit	dwelling unit	1992 and older dwelling units	All
Comments	Assume audits are renewed every 7 years to maintain water savings					16-year program to lower UFW below 10% by 2020

Notes:

RSF = Residential Single Family
RMF = Residential Multi Family
BUS/COM= Commercial
IND = Industrial
IRR = Dedicated irrigation meters
INS = Institutional/Public, buildings / grounds owned by the Water Utility or City
NRSF = New Single Family Homes
GOV = Government

	BMP 5a Water Budgets	BMP 5b Water Audits	BMP 6 Washer Rebates	BMP 7 Public Education	BMP 9 CII Audits	BMP 14 Toilet Rebates
Account Category	RES/COM – IRR	BUS	RSF	RSF/RMF	COM/BUS/INS	RSF/RMF
Affected End Uses	Irrigation	Irrigation	Laundry	All	All	Internal
Percent Reduction in Water Use	15%	15%	34%	1%	12%	60%
CUWCC MOU Sign-on Year	2001	2001	2001	2001	2001	2001
Evaluation Start Year	2005	2005	2005	2005	2005	2005
Required Interventions Starting in 2005 (Accounts)	14/14	16	0	6074	6	337/40
Market Penetration by End Of Program, %	90	15	4.8	100	10	Match resale rate
Measure Life (years)	10	10	Permanent	2	Permanent	Permanent
Initial Cost	$ -	$ -	$ -	$ -	$ -	NA
Utility Unit Cost, per site one time cost	$400.00	$1,500.00	$75.00	$2.50	$4,000.00	$50
Customer Unit Cost to achieve savings	$ -	$1,000.00	$200.00	$ -	$2,000.00	$75
Administration Cost, percent of unit cost	15%	30%	30%	25%	50%	included
Affected Units	Irrigation accounts	large landscape accounts	per dwelling unit	per dwelling unit	CII accounts	per toilet
Comments	Assume audits are renewed every 10 years to maintain water savings		BMP 6 complete			

Notes:

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NRSF = New Single Family Homes
GOV = Government

Measure	T2 - 1	T2 - 2	T2 - 3	T2 - 4	T2 - 5a	T2 - 5b	T2 - 6
	Rain-sensor (shut off device) retrofit on irrigation controllers	Cash for Grass (turf removal program)	Financial Incentives for Being Below Water Budget	Financial Rebates for Irrigation Meters	Smart Irrigation Controller Rebates	Smart Irrigation Controller Rebates	Financial Incentives/ Rebates for Irrigation Upgrades
Applicable Customer Classes	SF	Existing Customers SF, MF, CII	IRR	Existing CII with Mixed Use	SF	Existing MF, CII, IRR	Existing MF, CII, IRR
Applicable End Uses	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation
Market Penetration by End Of Program	10%	1%	100%	10%	5%	20%	10%
Water Use Reductions For Targeted End Uses	9%	36%	15%	15%	15%	15%	15%
Program Length, years	5	5	10	5	10	10	15
Measure Life, years	10	permanent	permanent	permanent	21	permanent	permanent
Utility Unit Cost for SF accounts, $/unit	$ 20.00	$ 500.00	$ 25,000.00	$ -	$ 450.00	$ -	$ -
Utility Unit Cost for MF accounts, $/unit	--	$ 500.00	$ -	$ -	$ -	$ 900.00	$ 500.00
Utility Unit Cost for non-Res accounts, $/unit	--	$ 500.00	$ -	$ 500.00	$ -	$ 900.00	$ 500.00
Customer Unit Cost. $/unit	$ 35.00	$ 500.00	$ 10,000.00	$ 500.00	$ 100.00	$ 100.00	$ 500.00
Annual Utility Admin & Marketing Cost	25%	25%	35%	25%	30%	30%	25%

Notes:

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GOV = Government

Measure	T2 - 7	T2 - 10	T2 - 12	T2 - 13
	Hotel retrofit (w/financial assistance) - CII Existing	High Efficiency Toilet (HET)	CII Rebates - replace inefficient water using equipment	0.5 gal/flush urinals in new buildings
Applicable Customer Classes	Existing CII	SF, MF	CII	COM New
Applicable End Uses	Indoor use	Toilet end use	Process end use	COM Urinal
Market Penetration by End Of Program	20%	20%	10%	100%
Water Use Reductions For Targeted End Uses	20%	45 to 55%	10%	65 to 75%
Program Length, years	15	10	15	30
Measure Life, years	permanent	permanent	permanent	permanent
Utility Unit Cost for SF accounts, $/unit	$ -	$ 150.00		$ 50.00
Utility Unit Cost for MF accounts, $/unit	$ -	$ 150.00		
Utility Unit Cost for non-Res accounts, $/unit	$ 100.00		$ 500.00	
Customer Unit Cost. $/unit	$ 200.00	$ 150.00	$ 1,000.00	$ 500.00
Annual Utility Admin & Marketing Cost	25%	35%	30%	25%

Notes:

RSF = Residential Single Family
RMF = Residential Multi Family
BUS/COM= Commercial
IND = Industrial
IRR = Dedicated irrigation meters
INS = Institutional/Public, buildings / grounds owned by the Water Utility or City
NRSF = New Single Family Homes
GOV = Government

Measure	ND 1	ND 2	ND 3	ND 4	ND 5	ND 6	ND 7	ND 8
	Rain-sensor shut off device on irrigation controllers	Smart Irrigation Controller	High Efficiency Toilet (HET)	Dishwasher New Efficient	Clothes washing machines requirement for new residential	Hot Water on Demand	High efficiency faucets and showerheads	Landscape and irrigation requirements
Applicable Customer Classes	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Applicable End Uses	Irrigation	Irrigation	Toilet end use	Dishwashers	Clothes Washers	Faucet and shower end use	Faucet and shower end use	Irrigation
Market Penetration by End Of Program	100%	100%	100%	100%	100%	100%	100%	100%
Water Use Reductions For Targeted End Uses	9%	15%	50 to 55%	34%	50%	14.2 gpd per house	15%	10%
Program Length, years	30	30	30	30	30	30	30	30
Measure Life, years	permanent	permanent	permanent	permanent	permanent	permanent	permanent	permanent
Utility Unit Cost for SFaccounts, $/unit	$ 12.50	$ 12.50	$ 12.50	$ 12.50	$ 12.50	$ 12.50	$ 12.50	$ 12.50
Utility Unit Cost for MF accounts, $/unit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Utility Unit Cost for non-Res accounts, $/unit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Customer Unit Cost. $/unit	$ 55.00	$ 500.00	$ 300.00	$ 400.00	$ 500.00	$ 700.00	$ 50.00	$ 3,000.00
Annual Utility Admin & Marketing Cost	10%	10%	10%	10%	10%	10%	10%	10%

Notes:

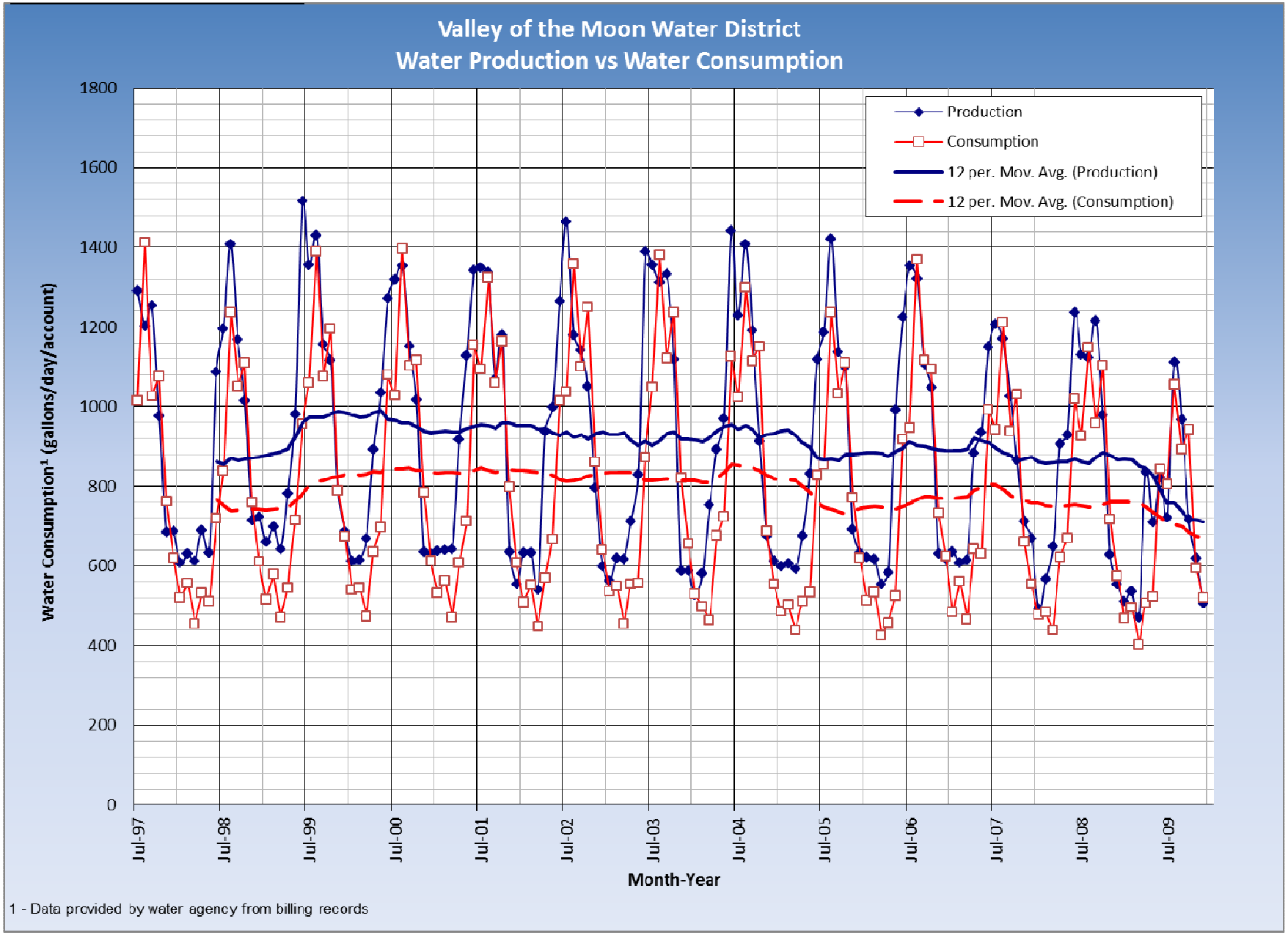
RSF = Residential Single Family
RMF = Residential Multi Family
BUS/COM= Commercial
IND = Industrial
IRR = Dedicated irrigation meters
INS = Institutional/Public, buildings / grounds owned by the Water Utility or City
NRSF = New Single Family Homes
GOV = Government
*Customer class varies depending upon local ordinances, Cal Green and contractor request of new measure or planned ordinances

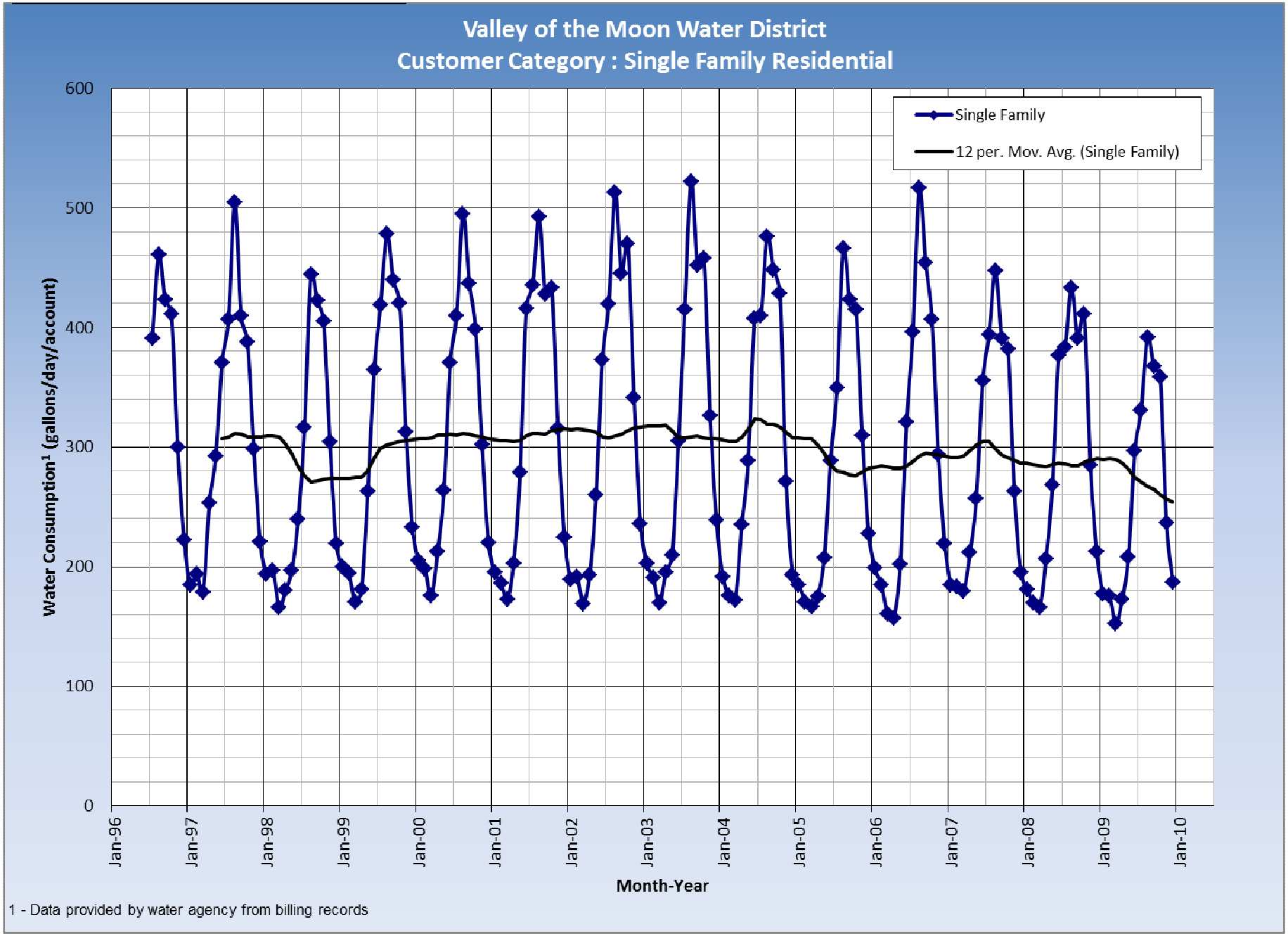
Fixture Replacement SB 407	Gray water Retrofit SF
Pre-1994 Existing Accounts	SF
Toilet, urinal, shower, lavatory faucet	Irrigation
4% SF, 2% MF and CII	5%
1% 2017-2020 SF, 1% 2019-2020 MF,1% CII 2019-2020	0.25%
Varies	40%
2014	2011
2020	2030
7	19
Permanent	Permanent
$ 25	$ 500
$ 25	$ -
$ 25	$ -
Varies	$ 500
Varies	$ -
Varies	$ -
25%	30%
Dwelling unit or CII account	Accounts
Measure will start in the year 2017 (SF) and 2019 (CII) to coincide with the California State Law SB 407. Work with the real estate industry to require a certificate of compliance be submitted to the City that the property and efficient fixtures where either already there or were installed at the time of sale, before close of escrow. Consider allowing this certification to be made as a part of the conventional private building inspection report process.	Provide a rebate (up to $500) to assist a certain percentage of single family homeowners per year to install gray water systems. Parts cost approx $200, installation is approx $400-$500

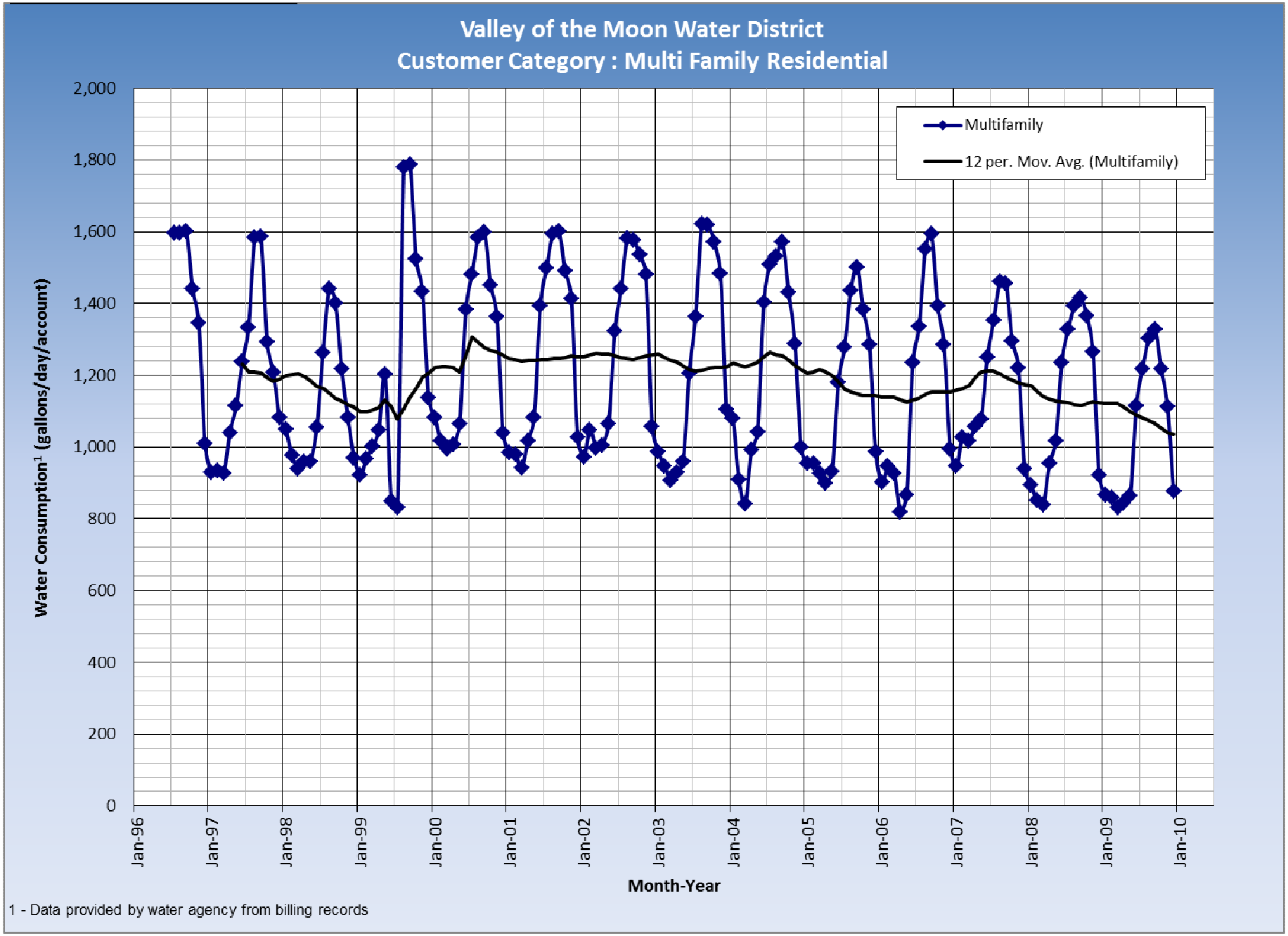
Notes:

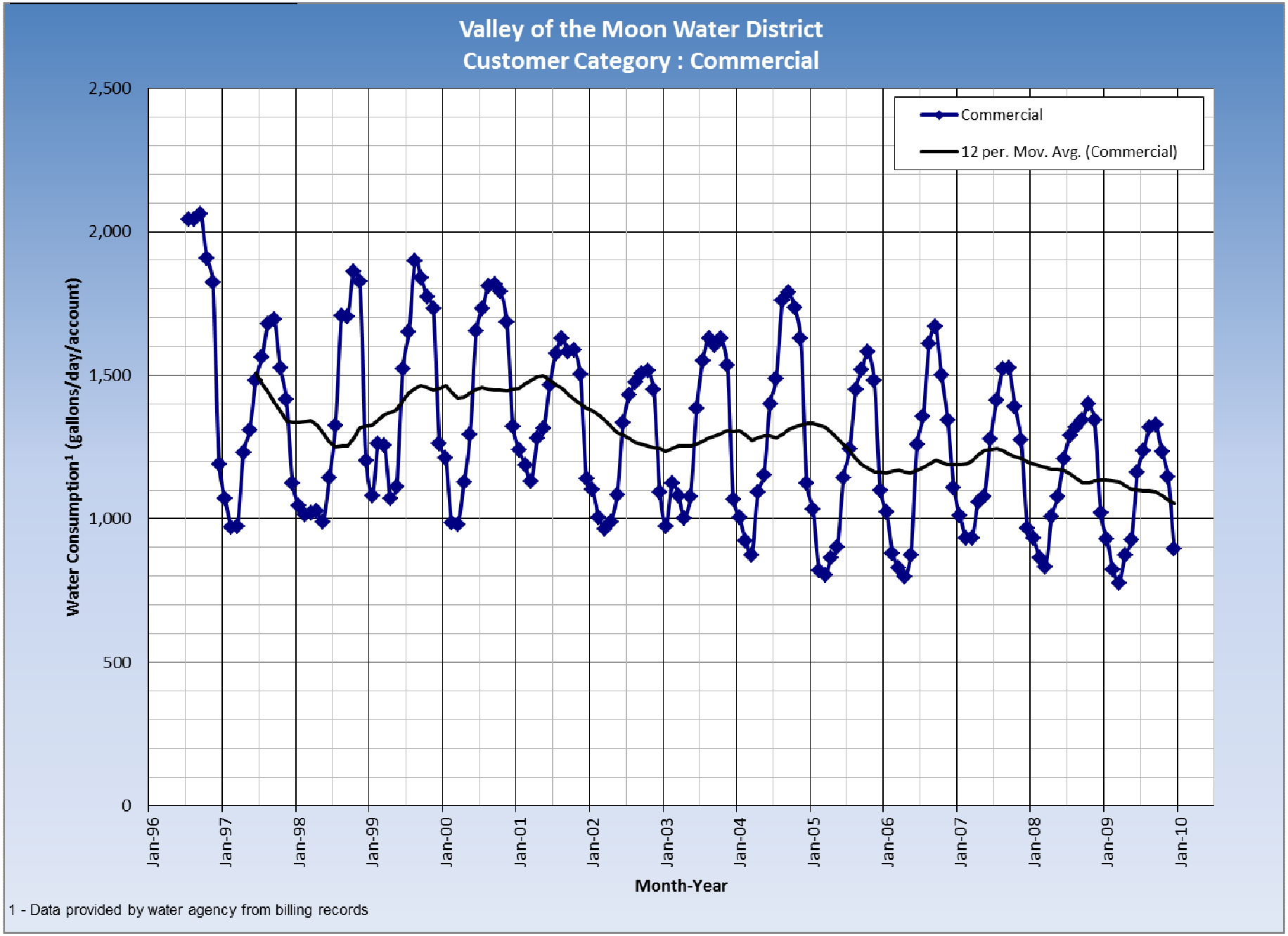
SF = Residential Single Family
MF = Residential Multi Family
CII = Commercial, Industrial and Institutional

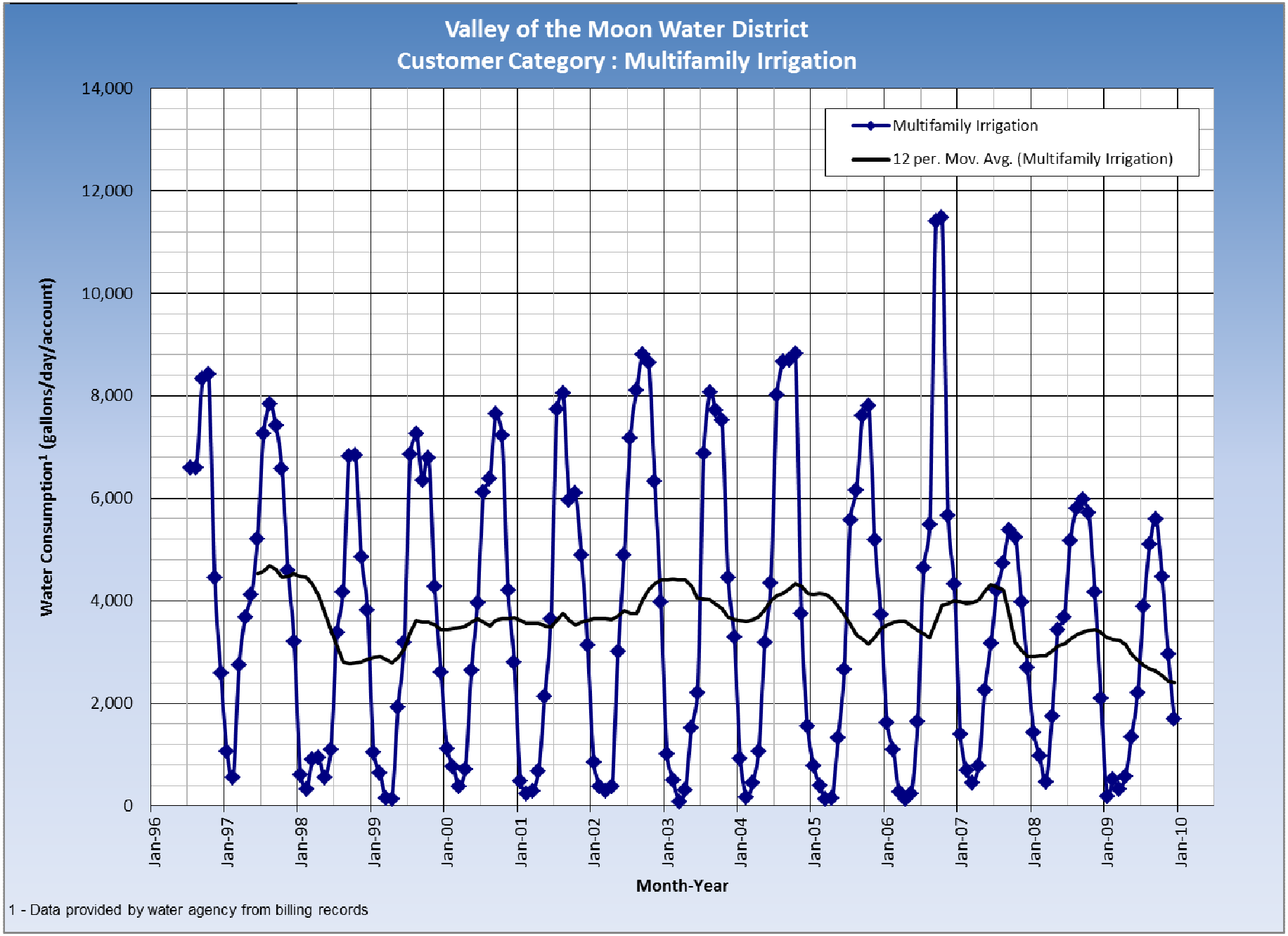
Appendix B - Water Use Data Graphs for Production and Customer Categories

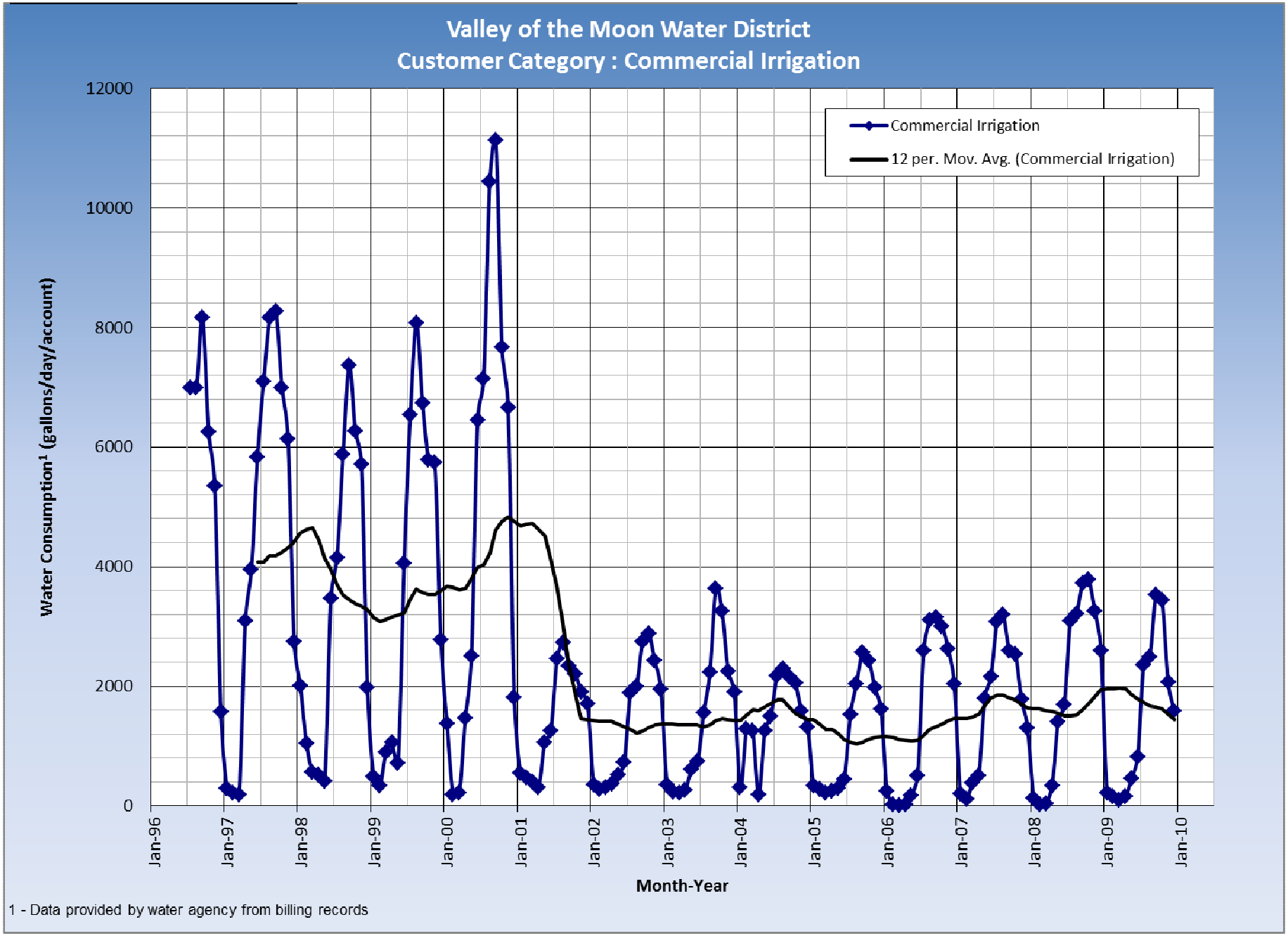


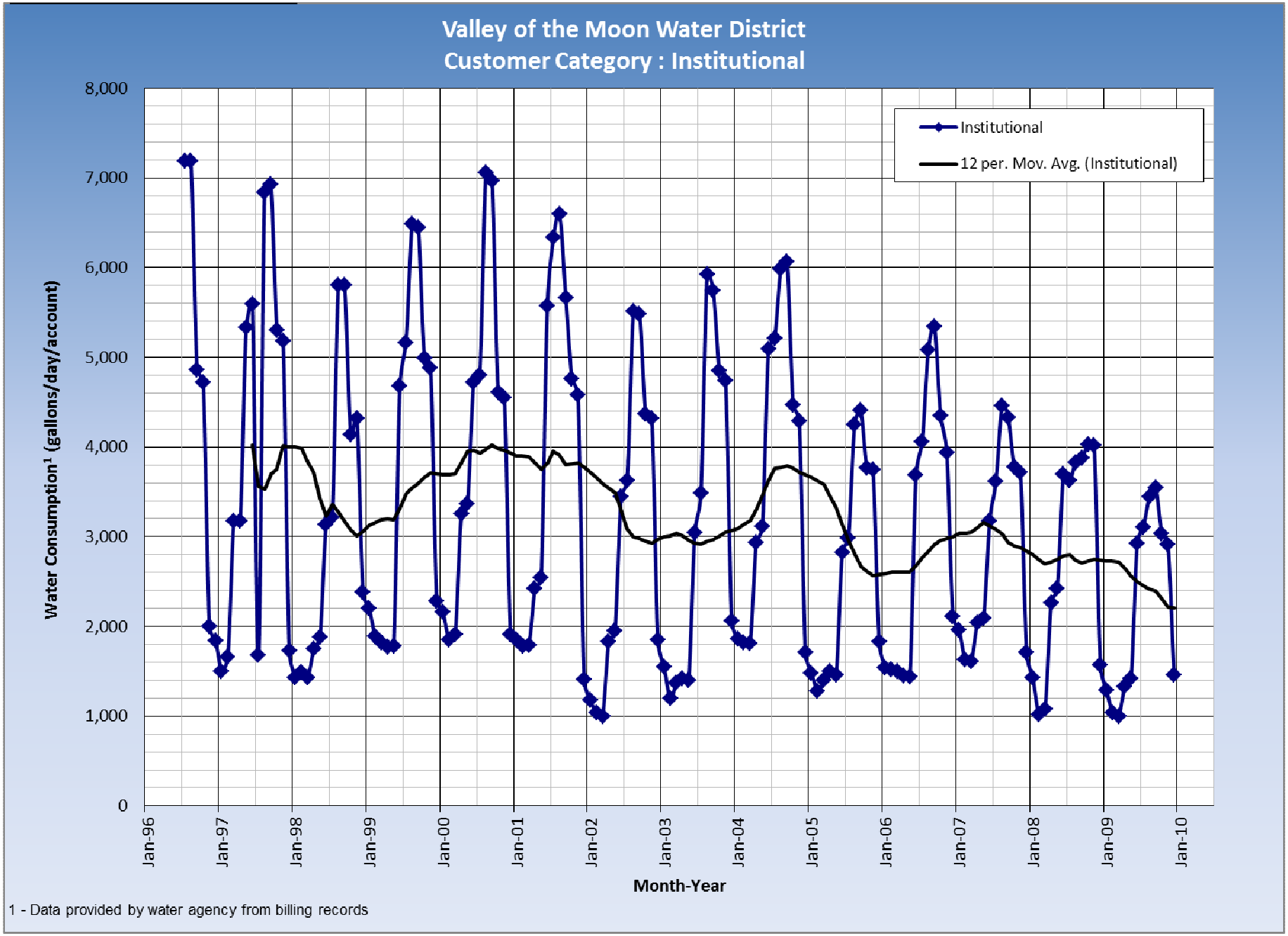

Valley of the Moon Water District
Customer Category : Single Family Residential
Single Family
12 per. Mov. Avg. (Single Family)
Water Consumption[1] (gallons/day/account)
600
500
400
300
200
100
0
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Month-Year
1 - Data provided by water agency from billing records


Valley of the Moon Water District
Customer Category : Multi Family Residential
Multifamily
12 per. Mov. Avg. (Multifamily)
Water Consumption[1] (gallons/day/account)
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Month-Year
1 - Data provided by water agency from billing records


Valley of the Moon Water District
Customer Category : Commercial
Commercial
12 per. Mov. Avg. (Commercial)
Water Consumption[1] (gallons/day/account)
2,500
2,000
1,500
1,000
500
0
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Month-Year
1 - Data provided by water agency from billing records


Valley of the Moon Water District
Customer Category : Multifamily Irrigation
Multifamily Irrigation
12 per. Mov. Avg. (Multifamily Irrigation)
Water Consumption[1] (gallons/day/account)
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Month-Year
1 - Data provided by water agency from billing records


Valley of the Moon Water District
Customer Category : Commercial Irrigation
Commercial Irrigation
12 per. Mov. Avg. (Commercial Irrigation)
Water Consumption[1] (gallons/day/account)
12000
10000
8000
6000
4000
2000
0
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Month-Year
1 - Data provided by water agency from billing records


Valley of the Moon Water District
Customer Category : Institutional
Institutional
12 per. Mov. Avg. (Institutional)
Water Consumption[1] (gallons/day/account)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Month-Year
1 - Data provided by water agency from billing records

Appendix C
SBx7-7 Regional Alliance

Appendix C.1
Regional Alliance Target Calculations

Regional Alliance Baseline and Water Use Target Calculations for the Sonoma County Water Agency Water Contractors

Senate Bill x7-7, the Water Conservation Act, was signed into law in 2009. The legislation set a goal of 20% reduction in statewide urban per capita water use and requires urban water retailers that must comply with the Urban Water Management Planning Act to set a 2020 urban per capita water use target.

The legislation provides that urban water retail suppliers may plan, comply, and report on the 2020 urban per capita water use target on a regional basis, an individual basis, or both.

> *10608.20. (a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.*
>
> *10608.28. (a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:*
> *(1) Through an urban wholesale water supplier.*
> *(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31(commencing with Section 81300)).*
> *(3) Through a regional water management group as defined in Section 10537.*
> *(4) By an integrated regional water management funding area.*
> *(5) By hydrologic region.*
> *(6) Through other appropriate geographic scales for which computation methods have been developed by the department.*
> *(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.*

Regional Alliance Baseline and Target Calculation

Per *Department of Water Resources Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR Methodologies), the Water Contractors of the Sonoma County Water Agency (Water Contractors) are eligible to form a regional alliance because we are recipients of water from a common wholesale water supplier.

Per the DWR Methodologies, there are three options for calculating a regional alliance target. The first option is for each member of the regional alliance to calculate their individual target and then weight the individual targets by each member's population. The weighted targets are then averaged to determine the regional alliance target. Current population data can be used for generating the regional target.

The second option is to sum up each member's gross water use and service area populations to develop a regional gross water use and population. A base daily per capita water use would be calculated and a target would be calculated using one of the following four methods:

1. 80% of the regional alliance's baseline per capita daily water use;

2. Performance standards of 55 gallons per capita per day for indoor water use, water efficiency equivalent to the Model Water Efficient Landscape Ordinance for landscapes irrigated through dedicated or residential meters, and a 10% reduction in Commercial, Industrial, Institutional water use;
3. 95% of the applicable state hydrologic region target as set forth in the State's 20x2020 Water Conservation Plan. If the area includes more than one hydrologic region, the area should be apportioned to each region based on population or area; or
4. Provisional Target Method 4 developed by DWR.

Alliances must have all of their members use the same baseline period.

The third option is to calculate regional gross water use or population directly for the entire regional alliance area. A base daily per capita water use would be calculated and a target would be calculated using one of the four methods listed above. As with the second option, alliances must have all of their members use the same baseline period. The regional target may not exceed 95% of the region's 5-year Base Daily Per Capita Water Use.

The data to calculate the third option is not easily available. Therefore, option 1 and option 2 were used for calculating a regional target for the Water Contractors. Upon review and evaluation, the Water Contractors are recommending option 1, below, for calculating the regional target.

Option 1 - Target

SCWA Service Area Regional 2020 Targets (DWR Methodology # 9)

SCWA Water Contractor	2015			2020		
	Current Population*	Water Contractor Staff Recommended Individual GPCD Target**	Product of Individual Population Size and GPCD Target [(1) x (2)]	Current Population	Water Contractor Staff Recommended Individual GPCD Target**	Product of Individual Population Size and GPCD Target [(1) x (2)]
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
Santa Rosa	163,436	136	22,227,296	163,436	127	20,756,372
North Marin	61,012	161	9,822,932	61,012	143	8,724,716
Petaluma	58,401	153	8,935,353	58,401	136	7,942,536
Rohnert Park	43,398	140	6,075,720	43,398	119	5,164,362
VOMWD	23,478	136	3,193,008	23,478	124	2,911,272
Sonoma	11,426	194	2,216,644	11,426	173	1,976,698
Cotati	7,711	134	1,033,274	7,711	130	1,002,430
Windsor	28,134	143	4,023,162	28,134	130	3,657,420
MMWD	190,600	137	26,074,080	190,600	124	23,634,400
Total	**587,596**		**83,601,469**	**587,596**		**75,770,206**

	2015	**2020**
Regional GPCD Target [Total of (3) / Total of (1)]	142	129

**** Current population from Water Contractor or from Department of Finance when not available from Water Contractor.***

***** Subject to change. Target has to be set via public hearing.***

Option 1 – Compliance Daily Per Capita Water Use Calculation

SCWA Service Area Regional Compliance Daily Per Capita Water Use (DWR Methodology # 9)				
SCWA Water Contractor	**2015**		**2020**	
	Projected Population	Annual Projected Water Demand after conservation and recycled water deducts in A.F.*	Projected Population	Annual Projected Water Demand after conservation and recycled water deducts in A.F.*
	(1)	**(2)**	**(1)**	**(2)**
Santa Rosa	194,851	27,194	204,519	27,934
North Marin	62,589	11,471	64,804	11,376
Petaluma	64,704	11.090	67,425	10,270
Rohnert Park	46,400	5,348	47,900	5,306
VOMWD	24,174	3,465	24,873	3,445
Sonoma	12,149	2,605	12,871	2,643
Cotati	8,105	1,079	8,518	1,096
Windsor	29,515	5,019	30,715	5,173
MMWD	195,200	27,761	198,200	27,359
Total	**637,687**	**95,032**	**659,825**	**94,602**
			2015	**2020**
Projected Regional GPCD [Total of (2), in gpd / Total of (1)]			133	128
Is the Projected Regional GPCD equal to or under Regional GPCD Target?			**YES**	**YES**
**** Water Conservation and recycled water deducts subject to change.***				

Data Reporting

A regional alliance must send a letter to DWR by July 1, 2011 stating that an alliance had been formed and including a list of alliance members. Regional alliances that do not submit a regional UWMP must submit regional alliance reports, including the following information:

- A list of the individual members in the alliance
- Baseline gross water use and service area population
- Individual 2015 and 2020 Water Use Targets for each alliance member as well as the regional 2015 and 2020 Water Use Targets
- Compliance year gross water use and service area population
- Adjustments to gross water use in compliance year

The above information must also be included in each regional alliance member's individual UWMP.

Compliance Assessment

If a regional alliance meets its regional target, all members in the alliance will be deemed compliant. If a regional alliance fails to meets its regional target, individual members who meet their individual targets will be deemed compliant. If a regional alliance fails to meet its regional target and an individual member fails to meet its individual target, the individual member will be deemed non-compliant.

Public Hearing Requirement

The legislation requires the urban retail water agency to select its 2020 water use target as detailed below:

10608.26. (a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20 for determining its urban water use target.

Regional Alliance Agreements and Dissolution

It is up to each regional alliance to determine the appropriate Memorandum of Understanding (MOU) or Agreement for a Regional Alliance. DWR will not review or approve MOUs or Agreements used to create a Regional Alliance, however any MOU or Agreement must be in compliance with all applicable sections of the Water Code.

Individual members can withdraw from a regional alliance. The individual member that withdraws must comply individually with the water use target and the Regional Alliance must recalculate the regional baseline and target data. The Regional Alliance may dissolve prior to 2020. If a Regional Alliance dissolves, individual members must comply individually with the water use target.

Appendix C.2
Letter Approving District's Membership

Letter Agreement

Between and Among

Cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor

And

North Marin Water District, Marin Municipal Water District

and Valley of the Moon Water District

For

Establishing a Regional Alliance to Comply with

SB x7-7 the Water Conservation Act of 2009

Recitals

A. The Water Conservation Act of 2009 (SB x7-7) set a goal of achieving a 20% reduction in statewide urban per capita water use by the year 2020 and requires urban water retailers to set a 2020 urban per capita water use target. SB x7-7 provides that urban water retailers may plan, comply and report on a regional basis, individual basis or both.

B. The Parties to this Letter Agreement (Cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor and North Marin, Marin Municipal and Valley of the Moon Water Districts) are eligible to form a "Regional Alliance" pursuant to the *Department of Water Resources Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR Methodologies) because the Parties receive water from a common water wholesale water supplier, the Sonoma County Water Agency (Agency). The Parties desire to establish a Regional Alliance for purposes of complying with SB x7-7.

C. The Parties and the Agency are signatories to the Sonoma-Marin Saving Water Partnership Memorandum of Understanding (S-MSWP MOU) that provides for the identification and implementation of regional water conservation programs and tasks as directed by the Water Advisory Committee (WAC). The S-MSWP MOU requires financial and reporting commitments for implementation of water conservation programs.

Agreement for Regional Alliance Target Setting and Reporting

1. Regional Alliance Formation and Target Setting

Pursuant to the DWR Methodologies, the Parties hereby form a Regional Alliance and agree to send a letter to the Department of Water Resources (DWR) prior to July 1, 2011 informing DWR that a Regional Alliance has been formed. The Parties agree that the Regional Alliance Target will be established using Option 1 (as Option 1 is described in the DWR Methodologies) and that each Party will include the Regional Alliance Target in its individual 2010 Urban Water Management Plan.

2. Regional Alliance Review

No later than December 31, 2015, the Parties agree to review and re-analyze the Regional Alliance and Regional Alliance Target as part of the preparation of the 2015 Urban Water Management Plan.

3. Regional Alliance Reporting

The Parties agree to prepare Regional Alliance Reports pursuant to the DWR Methodologies including but not limited to the following information: baseline gross water use and service area population, individual 2015 and 2020 water use targets for each Party and for the Regional Alliance, compliance year gross water use and service area population, and adjustments to gross water use in compliance year. The information will be provided by each Party and reported in the annual S-MSWP report in addition to the information required in the annual report, as outlined in the S-MSWP MOU.

4. Regional Water Supply Planning

The Parties agree to participate in discussions regarding regional water supply planning.

5. Regional Alliance Dissolution

The Parties agree that each Party can withdraw from the Regional Alliance at any time without penalty by giving written notice to all other Parties. If a Party withdraws from the Regional Alliance, the Parties agree that the Regional Target will be recalculated among remaining participating Parties as set forth in the DWR Methodologies and in Section 2 above.

6. Miscellaneous

This Letter Agreement shall be between and among those Parties that have executed this Letter Agreement by May 1, 2011. If all Parties have not executed this Letter Agreement by said date, the Parties who have executed this Letter Agreement by May 1, 2011, agree that the Regional Target will be recalculated among participating Parties as set forth in the DWR Methodologies and in Section 2 above.

7. Letter Agreement Authorization

This Letter Agreement may be signed in counterparts. By signing below, each signatory states that he or she is authorized to sign this Letter Agreement on behalf of the Party for which he or she is signing.

_____ _____
Date

Name: _____

City of Santa Rosa

_____ _____
Date

Name: _____

City of Rohnert Park

_____ _____
Date

Name: _____

City of Sonoma

_____ _____
Date

Name: _____

City of Cotati

Name: _____

City of Petaluma

Date

Name: _____

Town of Windsor

Date

Name: _____

North Marin Water District

Date

Name: _____

Marin Municipal Water District

Date

Name: _____

Valley of the Moon Water District

Appendix D
Water Waste Prohibition - Ordinance No. 1007

ORDINANCE NO. 1007

AN ORDINANCE OF THE VALLEY OF THE MOON WATER DISTRICT INSTITUTING WATER WASTE PROHIBITIONS

SECTION 1. The Valley of the Moon Water District does hereby ordains as follows:

The Regulations of the Valley of the Moon Water District hereby amended by adding Section 12 to read as follows:

"Section 12 - Water Waste Prohibitions

A. Purpose. The purpose of this Section is to promote water conservation and the efficient use of potable water furnished by the Valley of the Moon Water District by eliminating intentional or unintentional water waste when a reasonable alternative solution is available, and by prohibiting use of equipment which is wasteful.

B. Nonessential Uses. No customer of the Valley of the Moon Water District shall use or permit the use of potable water from the Valley of the Moon Water District for residential, commercial, institutional, industrial, agricultural, or other purpose for the following nonessential uses:

1. The washing of sidewalks, walkways, driveways, parking lots and other hard-surfaced areas by direct hosing, except as may be necessary to properly dispose of flammable or other dangerous liquids or substances, wash away spills that present a trip and fall hazard, or to prevent or eliminate materials dangerous to the public health and safety;

2. The escape of water through breaks or leaks within the customer's plumbing or private distribution system for any substantial period of time within which such break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of seventy-two (72) hours after the customer discovers such a break or leak or receives notice from the Valley of the Moon Water District, is a reasonable time within which to correct such break or leak or, at a minimum, to stop the flow of water from such break or leak;

3. Irrigation in a manner or to an extent which allows excessive run off of water or unreasonable over-spray of the areas being watered. Every customer is deemed to have his water system under control at all times, to know the manner and extent of his water use and any run off, and to employ available alternatives to apply irrigation water in a reasonably efficient manner;

4. Washing cars, boats, trailers or other vehicles and machinery directly with a hose not equipped with a shutoff nozzle;

5. Water for non-recycling decorative water fountains;

6. Water for single pass evaporative cooling systems for air conditioning in all connections installed after June 6, 2000 unless required for health or safety reasons;

7. Water for new non-recirculating conveyor car wash systems; and

8. Water for new non-recirculating industrial clothes wash systems.

C. Exempt Water Uses. All water use associated with the operation and maintenance of fire suppression equipment or employed by the Valley of the Moon Water District for water quality flushing and sanitation purposes shall be exempt from the provisions of this section. Use of water supplied by a private well or from a reclaimed wastewater, gray water or rainwater utilization system is also exempt.

D. Variances. Any customer of the Valley of the Moon Water District may make written application for a variance. Said application shall describe in detail why applicant believes a variance is justified.

1. The General Manager of the District may grant variances for use of water otherwise prohibited by this section upon finding and determining that failure to do so would cause an emergency condition affecting the health, sanitation, fire protection or safety of the applicant or public; or, cause an unnecessary and undue hardship on applicant or public, including but not limited to, adverse economic impacts, such as loss of production or jobs.

2. The decision of the General Manager of the District may be appealed to the Board of Directors by submitting a written appeal to the District within fifteen (15) calendar days of the date of the decision. Upon granting any appeal, the Board of Directors may impose any conditions it determines to be just and proper. Variances granted by the Board of Directors shall be prepared in writing and the Board of Directors may require the variance be recorded at applicant's expense.

E. Enforcement and Fees. Depending on the extent of the water waste the District may, after written notification to customer and a reasonable time to correct the violation as solely determined by the District, take some or all of the following actions. Penalties, fees and charges noted below shall be established by resolution of the District. The penalties listed in Sections E3, E4 and E5 below will be applied only in acute emergencies as determined and publicly announced by the General Manager, or after the Board has declared a Stage 2 or equivalent water shortage condition.

1. Written notice to the customer of the water waste violation including a specified period of time to correct the violation.

2. Personal contact with the customer at the address of the water service. If personal contact is unsuccessful, written notice of the violation including a date that the violation is to be corrected may be left on the premises, with a copy of the notice sent by certified mail to the customer.

3. The District may install a flow-restricting device on the service line.

4. The District may levy a water waste fee to the customer.

5. The District may cause termination of water service and the charge for same shall be billed to the customer. Except in cases of extreme emergency as solely determined by the General Manager of the District, service shall not be reinstated until verified by the District that the violation has been corrected and all charges and fees have been paid.

SECTION II. SEVERABILITY

If any section, subsection, sentence, clause, phrase, or word of this ordinance is for any reason held to be invalid, the validity of the remaining portion of this ordinance shall not be affected.

SECTION III. FINDINGS

A. This Ordinance is enacted in accordance with California Water Code section 375, *et seq*. and for the purpose of insuring that all water furnished by the District is put to reasonable beneficial use, to prevent the waste of water, and to promote efficient use and conservation of water.

B. The District determines that this ordinance is a Class 7 categorical exemption under section 15307 of the California Environmental Quality Act, which exempts actions by regulatory agencies for protection of natural resources.

SECTION IV. EFFECTIVE DATE

This ordinance shall become effective upon its adoption.

SECTION V. PUBLICATION

Within ten (10) days after its adoption, this resolution shall be published pursuant to Section 6061 of the Government Code in full in a newspaper of general circulation that is printed, published, and circulated in the District. If there is no such newspaper the resolution shall be posted within ten (10) days after its adoption in three public places within the District.

On the Motion of Director Whinery and second by Director Kenny, the Ordinance was PASSED, APPROVED AND ADOPTED this 6th day of June, 2000, by vote as follows:

President Willer	Aye	Director Sutsos	Aye
Vice President Whinery	Aye	Director Kenny	Aye
Director Pedroncelli	Aye		

AYES: 5 NOES: 0 ABSTAIN: 0 ABSENT 0

BY: SIGNED
David Willer, President of the Board

I HEREBY CERTIFY that the foregoing Resolution was duly adopted at a regular meeting of the Board of Directors of the Valley of the Moon Water District, held on the 6th day of June, 2000, of which meeting all Directors were duly notified and at which meeting a quorum was present at all times and acting.

By: SIGNED
Judith Ponts, Board Secretary

Approved: SIGNED
Attorney

User/Ordinances/ord1007

Appendix E

Water Shortage Emergency – Ordinance No. 1009

DRAFT

RESOLUTION OF THE VALLEY OF THE MOON WATER DISTRICT DECLARING A WATER SHORTAGE AND ACTION STAGE, AND ESTABLISHING AN OVERALL WATER DEMAND REDUCTION GOAL

WHEREAS, the Valley of the Moon Water District is a County Water District, duly organized and existing under the provisions of the County Water District Law (California Water Code section 30000 *et seq.*), and is empowered to provide water service to customers within certain boundaries; and

WHEREAS, due to current water supply conditions, the Sonoma County Water Agency (Agency) has reduced water delivery to the District and to all prime contractors which purchase water from the Agency by ____%; and

WHEREAS, due to (describe current water supply conditions – reduced deliveries, drought, contamination, etc.), the reduced water supply estimated to be available to the District from the Agency, together with the supply of water from other sources available to the District, will not be sufficient to meet the District's customers' normal water needs during (describe the time period); and

WHEREAS, the water conditions described above indicate that a ____% reduction in demand is required to ensure that the District will have an adequate supply of water to meet its customers' water needs during (describe the time period); and

WHEREAS, pursuant to the provisions of Water Code section 375 *et seq.* and 10632, the District has the authority and responsibility to adopt water demand reduction measures within its area of service during the existence of a water shortage, and the Board of Directors has conducted a duly noticed public hearing on this ____ day of ____, 2___, has heard a report from its General Manager on the reduced current water supply conditions and on the need for demand reduction during this time of reduced available supplies, and has provided an opportunity for the public to be heard on these matters.

NOW, THEREFORE, IT IS RESOLVED that the Board of Directors finds and determines that under the current conditions a water shortage exists within the area served by the District's water system, and that the water supplies available to the District are insufficient to serve the normal water demands of the District's customers.

BE IT FURTHER RESOLVED, that the Board of Directors declares that a water shortage exists, further declares that the water shortage condition has reached Action Stage _ and hereby establishes an Overall Demand Reduction Goal of __%, as defined in the District's Urban Water Shortage Contingency Plan, as the necessary and appropriate water conservation program in order to reduce the quantity of water used by the District's customers during the water shortage.

BE IT FURTHER RESOLVED, that the Board of Directors finds and determines that the water shortage declaration and the water conservation program provided for herein are in the public interest, serve a public purpose, and will promote the health, welfare, and safety of the people who reside within the District.

BE IT FURTHER RESOLVED, that this resolution shall become effective immediately upon its adoption, that the General Manager is hereby directed to provide for its publication in full within 10 days in a newspaper of general circulation within the District, and for its posting in at least 3 public places within the District.

BE IT FURTHER RESOLVED, that the General Manager is hereby authorized and directed to take such steps as he shall deem necessary to implement the Overall Demand Reduction Program, shall report back to this Board on the status of the water supply and the results of the Demand Reduction Program, and shall make such recommendations for further actions of this Board as may be necessary and appropriate during the existence of the water shortage.

THIS RESOLUTION PASSED AND ADOPTED THIS ___DAY OF _____ 20 _____, by the following votes:

Director _____ _____

Director _____ _____

Director _____ _____

Director _____ _____

Director _____ _____

By _____
President

By _____
Deputy Secretary

AYES _____ NOES _____ ABSENT _____ ABSTAIN _____

I HEREBY CERTIFY that the foregoing Resolution was duly adopted at a regular meeting of the Board of Directors of Valley of the Moon Water District held on the _____ day of _____, 20___, of which meeting all Directors were notified and at which meeting a quorum was present at all times and acting.

By _____

Deputy Secretary

Approved as to form:

_____

District Counsel

Appendix F
Targets/Compliance Table and Water Conservation BMP Reports

California Urban Water Conservation Council

TARGETS / COMPLIANCE
(CUWCC MOU)

Baseline / Initial GPCD
(Use option buttons to select)

GPCD in 2006 ○	137.1
Baseline GPCD (1997 to 2006) ◉	146.2
GPCD in 2010	102.9
GPCD Target for 2018	119.9

Potable Water GPCD for each Year in the Baseline Period

Year	GPCD
2006	137.1
2005	134.2
2004	145.9
2003	139.2
2002	141.5
2001	145.3
2000	159.5
1999	158.9
1998	142.9
1997	157.4

Biennial GPCD Compliance Table

Year	Report	Target		Highest Acceptable Bound	
		% Base	GPCD	% Base	GPCD
2010	1	96.4%	140.9	100%	146.2
2012	2	92.8%	135.7	96.4%	140.9
2014	3	89.2%	130.4	92.8%	135.7
2016	4	85.6%	125.1	89.2%	130.4
2018	5	82.0%	119.9	82.0%	119.9

Monthly GPCD Data for Weather Normalization

Fiscal Year Ending	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
2010	116.3	166.8	150.6	107.6	96.6	76.1	67.6	64.6	83.4	73.7	93.1	138.0
Baseline avg*	218.7	209.4	191.6	163.5	109.1	98.2	98.9	86.6	102.6	121.1	157.2	197.3

* The average for each month is based on the baseline period 1997 to 2006

The fields in red are required.

Agency name: Valley of the Moon Water District

Division name (Reporting unit): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

WATER SOURCES

Service Area Population: 22,387 — Census Tracts / Block Groups Coinciding with the District's Service Ar

2009

Potable Water

Own Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
Valley of the Moon Water District	497.00	Groundwater	Wells
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	

Imported Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
Sonoma County Water Agency	2,542.00	Other	Wholesale Agency
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	

Exported Water Name	AF/YEAR	Where Exported?

The fields in red are required.

Agency name: Valley of the Moon Water District

Division name (Reporting unit): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

Water Uses

2009

Potable Water Billed

Make sure to enter numbers in AF/Year.

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description
Single-Family	6,157.00	1,895.53	0.00		
Multi-Family	430.00	525.09	0.00		
Commercial	159.00	205.70	0.00		
Institutional	32.00	85.00	0.00		
Dedicated Irrigation	30.00	51.87	0.00		
Fire Lines	31.00	0.13	0.00		
Other					
Other					
Other					
Other					
Other					
Other					
Other					

Potable Water Un-Billed

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description
Institutional	2.00	0.32			
Dedicated Irrigation	2.00	0.11			
Other					
Other					
Other					
Other					
Other					
Other					
Other					
Other					
Other					
Other					
Other					

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Base Year Data

Link to FAQs

Reporting Unit Base Year

What is your reporting period? Fiscal

Base Year 2008

BMP 1.3 Metering

Number of unmetered accounts in Base Year 0

BMP 3.1 & BMP 3.2 & BMP 3.3 Residential Programs

Number of Single Family Customers in Base Year 6,157

Number of Multi Family Units in Base Year 2,588

BMP 3.4 WaterSense Specification (WSS) Toilets

Number of Single Family Housing Units constructed prior to 1992

Number of Multi Family Units prior to 1992

Average number of toilets per single family household 2.5

Average number of toilets per multi family household 2

Five year average resale rate of single family households NA

Five-year average resale rate of multi family households NA

Average number of persons per single family household 2.56

Average number of persons per multi family household 2.56

BMP 4.0 & BMP 5.0 CII & Landscape

Total water use (in Acre Feet) by CII accounts 291

Number of accounts with dedicated irrigation meters 30

Number of CII accounts without meters or with Mixed Use Meters 191

Number of CII accounts 191

Comments:

version 1.0

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Link to FAQs

View MOU

2009

BMP 3 Residential

◉ **Traditional (Sections A - D)** ○ **Flex Track (All Sections)**

For Traditional Track please answer the fields within the traditional boxes.
For Flex Track option, please answer the fileds within the flex track boxes.
You must enter all measured water savings manually. For each measure entered, upload a spreadsheet with sufficient information to show the way that water savings were measured and that the measure was adequately tracked (i.e., all relevant data was collected) - in some cases there are specific data points also requested in form which are necessary to show that the measure was implemented as described.

A) Residential Assistance / Leak Detection

Traditional / Flex Track

	Single Family	Multi Family	Total Water Savings AF/YR	Measured Water Savings AF/YR
Total Number of Accounts	6,157.00	430.00		
Total Number of Participants Overall	42.00	0.00		
Total Number of Leak Det Surveys	42.00	0.00		
Total Number of Showerheads	200.00	150.00		
Total Number of Faucet Aerators	300.00	200.00		
Total Number of Landscape Water Survey	42.00	0.00		

Number of Other Components

Description of Other Components Distributed

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)

(Enter the file name and Email file to Natalie@cuwcc.org)

B) High Efficiency Clothes Washers (HECWs)

Traditional / Flex Track

Number of incentives for HECWs with an AVERAGE Water Factor of 5.0: 160.00

Are Financial incentives provided for HECWs ? ◉ Yes ○ No

Has your Agency completed a HECW Market Penetration Study (this question does not impack your coverage report, purely informational) ○ Yes ◉ No

HECW Market Penetration Study Documents (Enter the file name and Email file to Natalie@cuwcc.org)

Measured water savings (AF/Year)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

C) WaterSense Specification (WSS) Toilets

(Agency must complete information for at least one coverage option (For Traditional 1, 2, or 3; For Flex Tarck 1, 2, 3, or 4).
You are encouraged to include information on other coverage options, as available.
If seeking credit for additional water savings, you must select Flex Track option)

Traditional

1. Retrofiton Resale Ordinance is in Place ○ Yes ⊙ No

If Yes, Choose A File (Enter the file name and Email file to Natalie@cuwcc.org)

2. A 75% Market Saturation Achieved ○ Yes ⊙ No

If yes, Choose A File (Enter the file name and Email file to Natalie@cuwcc.org)

3. WSS Toilets Installed

	Single Family	Multi Family
Number of WSS Toilets Installed	118.00	52.00
Measured Water Savings AF/YR		

Flex Track

4. Non-WSS Toilets

Type of Toilets	Single Family Number of Toilets	Single Family Water Savings	Multi Family Number of Toilets	Multi Family Water Savings
Select an Option				

Description of Other Non-WSS Type of Toilets

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

D) WSS for New Residential Development

(Agency must complete information for at least one coverage option.You are encouraged to include information on other coverageoptions, as available. If seeking credit for additional water savings you must select the Flex Track option)

Traditional

	Single Family		Multi Family	
Residential development Rebates	Yes ○	No ○	Yes ○	No ○
Recognition Programs	Yes ○	No ○	Yes ○	No ○
Reduced connection Fees	Yes ○	No ○	Yes ○	No ○
Ordinances	Yes ◉	No ○	Yes ◉	No ○

New Development Ordinance
(Enter the file name and Email file to Natalie@cuwcc.org)

Sonoma County Landscape Ordinance 2009

Number of new Single Family Units built in Service Area 13.00

Number of new Multi Family Units built in Service Area 0.00

Flex Track

In the following table, enter one row for each incentive typr program you offer

List of Incentive Amount

Incentive Type	Incentive Amount	Number of WSS fixtures installed	Number of Participating		Measured Water Savings	
			Single Family	Multi Family	Single Family	Multi Family

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

For Traditional Option, Stop Here, do not go further.
For Flex Track Option, please continue...

Flex Track Menu Options

In addition to the measures on the BMP List, the Flex Track menu options may be implemented to meet the savings goal for this BMP. Fill in the water savings measures that your agency has implemented.

E) High bill contact with single-family and multi-family customers

Measured water savings (AF/Year)

Select the Types of Contact:

☐ Email ☐ Phone ☐ Letter ☐ Others (describe)

Upload sample of contact contents (email, letter, etc.)
– if applicable; enter the file name and email file to Natalie@cuwcc.org

Who initiated the contact: (Please Specify customer, agencies, or both)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)

(Enter the file name and Email file to Natalie@cuwcc.org)

F) Educate residential customers about the behavioral aspects of water conservation

Measured water savings (AF/Year)

Select types of educational methods used:	**# Events**	**# Customers Reached**
☐ Workshop		
☐ Community Event		
☐ Letter		
☐ On-Site Visit		
☐ Phone Call		
☐ Water Survey		
☐ Website Hit		
☐ Door Hanger		
☐ Other (Describe)		

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

G) Notify residential customers of leaks on the customer's side of the meter

Type of Notification (Describe)

How many were sent out?

Measured water savings (AF/Year)

Upload sample notification method(email, letter, etc.) – if applicable

(Enter the file name and Email file to Natalie@cuwcc.org

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

H) Provide bill or surcharge refunds for customers to repair leaks on the customer's side of the meter.

Number of Leaks Repaired

Number of bill adjustments/credits/refunds provided

Describe here or upload a document with a policy description below:

Measured water savings (AF/Year)

Upload file describing Policy (Enter the file name and Email file to Natalie@cuwcc.org)

If you are using your own water-savings measure, send your supporting spreadsheet

Enter the file name and Email to Natalie@cuwcc.org

I) Provide unique water savings fixtures that are not included in the BMP list above

Fixture or Device	Description	Quantity Installes	Measured water savings (AF/YR)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

J) Install residence water use monitors.

Type of Monitor	Brand	Number Installed	Measured water savings (AF/Year)
☐ Dashboard			
☐ Leak Detector			
☐ Data Logger			

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

K) Participate in programs that provide residences with school water conservation kits.

Number of Kits Distributed

Kit contents (including model of fixtures)

List of what was actually installed in the homes (number of showerheads, aerators etc.).

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

L) Implement an automatic meter reading program for residential customers.

AMR or AMI Select an Option Type of Network Select an Option

Number of connections installed

☐ Is your agency using these to contact high water-use customers?

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

OTHER Types of Measures.

Type of Program	Sample / Description	Measured Water Savings (AF/YR)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

Comments

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

2009

Link to FAQs

View MOU

BMP 4 CII

Traditional ○ (Section A - L)

Flex Track ○ (All Sections)

For Traditional Track please answer the fields within the traditional boxes.
For Flex Track option, please answer the fileds within the flex track boxes.

You must enter all measured water savings manually in the summary cells on the right. For each measure entered, upload a spreadsheet with sufficient information to show the way that water savings was measured and that the measure was adequately tracked (i.e., all relevant data was collected) - in some cases there are specific data points also requested in the flex track data entry form which are necessary to show that the measure was implemented as described.

CII Type of measure implemented

Traditional

A) High - Efficiency Toilets.

Measured water savings (AF/Year)

Number: 7

Type of program: Direct install

Other type of program:

Flex Track

Do you accept the Council's default savings number for this measure? ○Yes○No

Council's Annual Water Savings 0.041748 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

B) High -Efficiency Urinals (0.5 gpf)

Flex Track

Traditional

Number 0

Type of program

Other type of program

Measured water savings (AF/Year)

Do you accept the Council's default savings number for this measure? ◯Yes◯No

Council's Annual Water Savings 0.069086 AF per device

If not, Please provide the following

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

C) Ultra Low Volume Urinals (0.125 gpf)

Flex Track

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Do you accept the Council's default savings number for this measure? ◯Yes◯No

Council's Annual Water Savings 0.080603 AF per device

If not, Please provide the following

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

D) Zero Consumption Urinals (0.0 gpf)

Flex Track

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Do you accept the Council's default savings number for this measure? ◯Yes ◯ No

Flex Track

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

Council's Annual Water Savings 0.0921146 AF per device

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

E) Commercial High - Efficiency Single Load Clothes Washers

Traditional

Number 0

Type of program

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Counsil's default savings number for this measure ? ○Yes○No

Council's Annual Water Savings 0.116618 AF per device

If not , Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

F) Cooling Tower Conductivity Controllers.

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ○Yes○No

Council's Annual Water Savings 1.032250 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

G) Cooling Tower pH Controllers

Traditional

Number: 0

Type of program: Select an Option

Other type of program:

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ○Yes○No

Council's Annual Water Savings 3.981543 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet

Enter the file name and Email to Natalie@cuwcc.org

H) Connectionless Food Steamers.

Traditional

Number: 0

Type of program

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ○Yes○No

Council's Annual Water Savings 0.25 AF per Steamer Compartment

mIf not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet

Enter the file name and Email to Natalie@cuwcc.org

I) Medical Equipment Steam Sterilizers

Flax Track

Traditional

Number: 0

Type of program

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure? ○Yes○No

Council's Annual Water Savings 1.538 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet Enter the file name and Email to Natalie@cuwcc.org

J) Water - Efficient Ice Machines.

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ○Yes○No

If not, Please provide the following:

Council's Annual Water Savings 0.0834507 AF per device

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet Enter the file name and Email to Natalie@cuwcc.org

K) Pressurized Water Brooms.

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure? ○Yes○No

Council's Annual Water Savings 0.1534 AF per device

Flex Track

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

L) Dry Vacuum Pumps.

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ○Yes○No

Council's Annual Water Savings 0.064 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Traditional Reporting Stop Here, Do not continue

Flex Track Reporing Please Continue...

M) Industrial Process Water Use Reduction.

Number

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Type of Process Water Reduced

If re-using water, what was the secondary use of the water? (such as pre-rince cycle or landscaping)

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

N) Commercial Laundry Retrofits.

Number of customers

Measured water savings (AF/Year)

Type of customer

- ☐ hotels
- ☐ campuses
- ☐ prisons
- ☐ laundromats

Lease / own machines

○ Lease ○ Own Machines ○ Both

Type of program

Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

O) Industrial Laundry Retrofits.

Measured water savings (AF/Year)

Total Number of customers

Total Volume of laundry processed annually

Select an Option

Type of program

Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

P) Filter Upgrades (for pools, spas, and fountains).

Number of pools upgraded

Number of spas upgraded

Number of fountains upgraded

Measured water savings (AF/Year)

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Q) Car Wash Reclamation Systems

Measured water savings (AF/Year)

	Conveyor	In-bay
Total Number of program participants (accounts)		
Total Number of vehicles washed annually		

Do you accept the Council's default savings number for this measure? ○Yes○No

Council's Annual Water Savings 0.00004607 (or 15 gals) per vehicle

If not, Please provide the following:

Total Measured Water Savings(AF/Year)	
Measure life (years)	
Lifetime water savings (years)	

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

R) Wet Cleaning.

		Measured water savings (AF/Year)
Brief description of program		

Total Measured Water Savings(AF/Year)	
Measure life (years)	
Lifetime water savings (years)	

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

S) Water Audits (To avoid double counting, do not include device/replacement water savings.)

Number of water audits by type of business

		Measured water savings (AF/Year)
Auto		
Food		
Health		
Hotels		

Manufacturing	
Membership	
Multi-use	
Office	
Religious	
Restaurant	
Retail/ Wholesale	
School	
Other (with description)	
Description of Other	

Total Measured Water Savings(AF/Year)	
Measure life (years)	
Lifetime water savings (years)	

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

T) Clean In Place (CIP) Technology (such as bottle sterilization in a beverage processing plant)

		Measured water savings (AF/Year)
Number of customers		
Type of program	Select an Option	
Other type of program		

Total Measured Water Savings(AF/Year)	
Measure life (years)	

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

U) Waterless Wok

Number

Type of program — Select an Option

Measured water savings (AF/Year)

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

V) Alternative On-site Water Sources (For Rain Water Harvesting, commercial rain barrels are excluded. For Foundation Drain Water, exclude permeable paving.)

Measured water savings (AF/Year)

Select type	Number	Description
☐ Cooling Condensate		
☐ Foundation Drain Water		
☐ Gray Water		
☐ Storm Water		
☐ Rain Water		
☐ Pond and Water Feature Recycling		

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

W) Sub - metering

Measured water savings (AF/Year)

Select type	Number	Description
☐ Condominiums		
☐ Apartments		
☐ Mobile Homes		

Do you accept the Council's default savings numbers for this measure? ○Yes ○No

Council's Annual Water Savings
Appartments & Condos=0.024419 AF/YR
Mobile Home = 0.056774 AF/Yr

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

X) High Efficiency Showerheads

Measured water savings (AF/Year)

Number

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Y) Faucet Flow Restrictors

Measured water savings (AF/Year)

Number

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Z) Water Efficient Dishwashers

Measured water savings (AF/Year)

Select type — Number

- ☐ Rack
- ☐ Conveyor
- ☐ Other

Description of Other

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)
Measure life (years)
Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

AA) Hot Water on Demand

Measured water savings (AF/Year)

Number
Type of program — Select an Option
Other type of program

Total Measured Water Savings(AF/Year)
Measure life (years)
Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

BB) Pre-rinse Spray Valves of 1.3 gpm (gallons per minute) or less

Measured water savings (AF/Year)

Number
Type of program — Select an Option
Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

CC) Central Flush Systems

Measured water savings (AF/Year)

Number

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Other Measures chosen by the Agency

Measured water savings (AF/Year)

Description of program

Sample (if applicable)

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

2009

BMP 5 Landscape

Link to FAQs

View MOU

(•) Traditional ( ) Flex Track

For Traditional Track please answer the fields within the traditional boxes.
For Flex Track option, please answer the fileds within the flex track boxes.
You must enter all measured water savings manually. For each measure entered, upload a spreadsheet with sufficient information to show the way that water savings were measured and that the measure was adequately tracked (i.e., all relevant data was collected) - in some cases there are specific data point salso requested in form which are necessary to show that the measure was implemented as described.

Accounts with Dedicated Irrigation Meters

Traditional

Number of dedicated irrigation meter accounts	30.00
Number of dedicated irrigation meter accounts with water budgets	30.00
Aggregate water use for dedicated non-recreational landscape accounts with budgets	52.00
Aggregate acreage assigned water budgets for dedicated non-recreational landscape accounts with budgets	14.87
Preserved water use records and budgets for customers with dedicated landscape irrigation accounts for at least four years	(•) Yes ( ) No

Flex Track

Water Savings from Accounts with dedicated irrigation meters with water budgets (Acre Feet)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)

(Enter the file name and Email file to Natalie@cuwcc.org)

Technical Assistance

Traditional

Number of Accounts 20% over-budget	0.00
Number of accounts 20% over-budget offered technical assistance	0.00
Number of accounts 20% over-budget accepting technical assistance	0.00

Measured water savings (AF/Year)

Flex Track

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)

(Enter the file name and Email file to Natalie@cuwcc.org)

Irrigation Water Use Surveys for Mixed-use and Un-metered Accounts

Traditional

Number of mixed use and un-metered accounts	0.00
Number of irrigation water use surveys offered (cumulative, all years)	0.00
Number of irrigation water use surveys accepted (cumulative)	0.00
Can your Agency estimate the amount of landscape acreage for mixed use and Un-metered accounts	○ Yes ◉ No
If Yes, Aggregate acreage for mixed use and Un-metered accounts	

Measured water savings (AF/Year)

Flex Track

Esrimated water demand from acreage for mixed use and Un-metered accounts	
Annual water savings by customers receiving irrigation water savings surveys and implementing recomendations	

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

Financial Incentives

Traditional

Have you implemented and maintained an irrigation equipment retrofit incentive program? ○ Yes ◉ No

Number of incentives	Dollar value of incentives	Incentive Types	Measured Water Savings (AF/YR)

Flex Track

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

Traditional Reporting Stop Here, Do not continue
Flex Track Reporing Please Continue...

Landscape Flex Track Measure Types

1. Monitor and report on landscape water use

A) Measure landscapes and develop water budgets for customers with dedicated landscape meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules (such as faxes, twitter, etc. not included in the previous sections).

Measured water savings (AF/Year)

Enter the Number of sites with:

Dedicated Mixed Meters

Water Budgets

Landscape Measurements

Others (describe)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

B) Measure landscapes and develop water budgets for customers with Mixed Use meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules.

Measured water savings (AF/Year)

Enter the Number of sites with:

Dedicated Mixed Meters

Water Budgets

Landscape Measurements

Others (describe)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

C) Establish agency-wide water budget. (Note that: ETo based water budget in the MWELO changed in 2010 from .8ETo to .7ETo.)

Measured water savings (AF/Year)

Agency-wide total irrigated area (Acres)

Amount of Water Used (AF/Acre)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

D) Establish agency-wide, sector-based irrigation goal to reduce water use, based on seasonality.

Measured water savings (AF/Year)

Number of minimum irrigation goal (AF/Acre)

Amount of Water Used per Period (AF/Period)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

2. Provide technical landscape resources and training

A) Upon customer requests, provide landscape irrigation management and landscape design information and resources: provide assistance, answer customer questions, respond to run-off and high-bill calls.

Measured water savings (AF/Year)

Enter the Number of:

Contacts In Person

Contacts over the phone

Contacts via Email

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

B) Perform landscape & irrigation audits: including irrigation scheduling, plant information, and landscape area measurement.

Measured water savings (AF/Year)

Enter the Number of:

Audits conducted per year

Measurement of square footage of Turf areas

Measurement of square footage of NON Turf areas

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

C) Sponsor, co-sponsor, promote, or support landscape workshops, training, presentations and other technical educational events for homeowners and professionals: design, installation, maintenance, water management.

Enter the Number of:

Events

Participants

List Type or Title of Events

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

D) Establish Time-of-Day Irrigation Restrictions.

Yes No

Describe Restrictions:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

E) Establish Day-of-Week Irrigation Restrictions. Yes No

Describe Restrictions:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

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3. Provide incentives

A) Establish Landscape budget-based rates. ◯ Yes ◯ No

Describe Rates:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

B) Provide incentives for conversions from mixed-use meters to dedicated landscape meters.

Number of Conversions:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

C) Provide incentives for installing sub-meters to separate landscape water use

Number of meters installed:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

D) Provide incentives for irrigation equipment upgrades that improve distribution uniformity, irrigation efficiency, or scheduling capabilities.

Select types of irrigation equipment upgrades:	Number of devices installed	**Measured water savings (AF/Year)**
☐ Controllers		
☐ Emitters		
☐ Soil moisture sensors		
☐ Pressure Regulators		
☐ Rain shut off devices		
☐ Other (describe)		

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

E) Provide incentives for the reduction of water use over an irrigated area, or reduction in the size of the irrigated area due to replacement of turf or other high water-using plants with low water-using plants, artificial turf, or permeable surfaces.

Acreage of live turf converted to low water-using plants, artificial turf, or permeable surfaces: _____ Acres

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

F) Provide incentives for conversions from potable to recycled water.

Number of Conversions: _____

Number of Incentives: _____

Funds Invested: _____

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

G) Provide incentives for the use of alternative sources of water in the landscape (i.e. gray water, rainwater, cisterns, etc.)

Number of Conversions: _____

Number of Incentives: _____

Funds Invested: _____

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

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4. Participate in local and regional planning and regulatory activities

A) Collaborate with planning agencies at the local and regional level, other water suppliers in the area and stakeholders in response to state or federal requirements such as the State Model Water Efficient Landscape Ordinance and AB 1881. Participate in the development, review, implementation, and enforcement of requirements for new developments. Provide water use data to planning agencies.

Measured water savings (AF/Year)

Public Information Programs List

Agency Type	Describe Involvement	If Ohter: Enter Name	Actions

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

B) Establish or participate in a water conservation advisory committee or other community outreach effort to drive market transformation and exchange information about landscape water conservation with developers, community-based organizations, homeowners associations, residential customers, landscape professionals, educators, other water suppliers in region.

◯ **Yes** ◯ **No**

Describe Involvement:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

C) Participate in regional efforts: integrated water resource management, watershed management, NPDES permit agencies, etc.

◯ **Yes** ◯ **No**

Describe Involvement:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

---

5. Develop a holistic approach to landscape water use efficiency

A) Develop and implement a comprehensive landscape water conservation program for all customers. Target marketing efforts to those most likely to result in benefits to both customer and Agency.

Describe Program:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

---

6. Other Measures

A) Other Landscape Measures.

Describe Other Landscape Measures:

Measured water savings (Af/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file Natalie@cuwcc.org)

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Link to FAQs

2009

BMP 1.1 Operations Practices

Comments:

See the complete MOU: View MOU

See the coverage requirements for this BMP:

Conservation Coordinator

Conservation Coordinator (•) Yes ( ) No

Contact Information

First Name	Shari
Last Name	Walk
Title	Office Supervisor
Phone	707-996-1037
Email	swalk@vomwd.com

Note that the contact information may be the same as the primary contact information at the top of the page. If this is your case, excuse the inconvenience but please enter the information again.

Water Waste Prevention

Water Agency shall do one or more of the following:

a. Enact and enforce an ordinance or establish terms of service that prohibit water waste
b. Enact and enforce an ordinance or establish terms of service for water efficient design in new development
c. Support legislation or regulations that prohibit water waste
d. Enact an ordinance or establish terms of service to facilitate implementation of water shortage response measures
e. Support local ordinances that prohibit water waste
f. Support local ordinances that establish permits requirements for water efficient design in new

To document this BMP, provide the following:

a. A description of, or electronic link to, any ordinances or terms of service
b. A description of, or electronic link to, any ordinances or requirements adopted by local jurisdictions or regulatory agencies with the water agency's service area.
c. A description of any water agency efforts to cooperate with other entities in the adoption or enforcement of local requirement
d. description of agency support positions with respect to adoption of legislation or regulations

You can show your documentation by providing files, links (web addresses), and/or entering a description.

File name(s): Email files to natalie@cuwcc.org: Ordinance 1007.Adopted 060600 & Ordinance 1009.Adopted 030309

Web address(s) URL: comma-separated list:

Enter a description: VOMWD is a member of the Sonoma Marin Saving Water Partnership - A partnership among all the retail water contractors and Marin Municipal Water District formed to implement water conservation measures regionally.

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

BMP 1.3 Metering with Commodity

Link to FAQs

See the complete MOU: View MOU

See the coverage requirements for this BMP:

Implementation

Does your agency have any unmetered service connections? ○ Yes ◉ No

If YES, has your agency completed a meter retrofit plan? ○ Yes ○ No

Enter the number of previously unmetered accounts fitted with meters during reporting year: 0

Are all new service connections being metered? ◉ Yes ○ No

Are all new service connections being billed volumetrically? ◉ Yes ○ No

Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters? ◉ Yes ○ No

Please Fill Out The Following Matrix

Account Type	# Metered Accounts	# Metered Accounts Read	# Metered Accounts Billed by Volume	Billing Frequency Per Year	# of estimated bills/yr
Single-Family	6,157	6,157	6,157	Bi-monthly	6
Multi-Family	430	430	430	Bi-monthly	6
Commericial	159	159	159	Bi-monthly	6
Institutional	32	32	32	Bi-monthly	6
Dedicated Irrigatic	30	30	30	Bi-monthly	6
Fire Lines	31	31	31	Bi-monthly	6
Other				Other	
Other				Other	
Other				Other	
Other				Other	

Number of CII Accounts with Mixed-use Meters: 191

Number of CII Accounts with Mixed-use Meters Retrofitted with Dedicated Irrigation Meters during Reporting Period: 0

Feasibility Study

Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? ○ Yes ◉ No

If YES, please fill in the following information:

A. When was the Feasiblity Study conducted

B. Email or provide a link to the feasibility study (or description of):

File name(s): Email files to natalie@cuwcc.org Enter the file name here e.g. WaterWastePreventionOrdinance

Web address(s) URL: comma-separated list Enter the URL to your documentation.

General Comments about BMP 1.3:

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

Link to FAQs

2009

BMP 2.1 Public Outreach - Retail Reporting

View MOU

Is a Wholesale Agency Performing Public Outreach?

Are there one or more wholesale agencies performing public outreach which can be counted to help your agency comply with the BMP? (•) Yes ( ) No

Enter the name(s) of the wholesale agency (comma delimited): Sonoma County Water Agency

Is your agency performing public outreach?

Report a minimum of 4 water conservation related contacts your agency had with the public during the year.

Public Information Programs List

Did at least one contact take place during each quarter of the reporting year? ✔

Number of Public Contacts	Public Information Programs
41,400	Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets
15,000	Newsletter articles on conservation
1,200	Website
4,500	General water conservation information
	Select a public contact

Contact with the Media

Are there one or more wholesale agencies performing media outreach which can be counted to help your agency comply with the BMP? (•) Yes ( ) No

Enter the name(s) of the wholesale agency (comma delimited): Sonoma County Water Agency

OR Retail Agency (Contacts with the Media)

Media Contacts List

Did at least one contact take place during each quarter of the reporting year? ☐

Number of Media Contacts	Did at least one contact take place during each quarter of the reporting year?	Media Contact Types
		Select a type of media contact
		Select a type of media contact
		Select a type of media contact
		Select a type of media contact
		Select a type of media contact
		Select a type of media contact

Is a Wholesale Agency Performing Website Updates?

Did one or more CUWCC wholesale agencies agree to assume your agency's responsibility for meeting the requirements of and for CUWCC reporting of this BMP? (•) Yes ( ) No

Enter the name(s) of the wholesale agency (comma delimited)

Sonoma County Water Agency

Is Your Agency Performing Website Updates?

Enter your agency's URL (website address):

Describe a minimum of four water conservation related updates to your agency's website that took place during the year:

Did at least one Website Update take place during each quarter of the reporting year? ( ) Yes ( ) No

Public Outreach Annual Budget

Enter budget for public outreach programs. You may enter total budget in a single line or brake the budget into discrete categories by entering many rows. Please indicate if personnel costs are included in the entry.

Category	Amount		Personnel Costs Included? If yes, check the box.	Comments	

Comments:

Sonoma County Water Agency is completing this BMP on behalf of Valley of the Moon Water District.

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

Link to FAQs

2009

BMP 2.1 Public Outreach Cont'd

View MOU

Public Outreach Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question related to your budget (Section 2.1.7, above). For example, if you included personnel costs in the budget entered above, be sure to include them here as well.

Expense Category	Expense Amount	Personnel Costs Included?	
			If yes, check the check box.

Additional Public Information Program

Please report additional public information contacts. List these additional contacts in order of how your agency views their importance / effectiveness with respect to conserving water, with the most important/ effective listed first (where 1 = most important).

Were there additional Public Outreach efforts? ○ Yes ○ No

Public Outreach Additional Information

Public Information Programs	Importance	

Social Marketing Programs

Branding

Does your agency have a water conservation "brand," "theme" or mascot? ○ Yes ○ No

Describe the brand, theme or mascot.

Market Research

Have you sponsored or participated in market research to refine your message? ○ Yes ○ No

Market Research Topic

Brand Message

Brand Mission Statement

Community Committees

Do you have a community conservation committee? ○ Yes ○ No

Enter the names of the community committees:

Training

Training Type	# of Trainings	# of Attendees	Description of Other

Social Marketing Expenditures

Public Outreach Social Marketing Expenses

Expense Category	Expense Amount	Description

Partnering Programs - Partners

Name **Type of Program**

☐ CLCA?

☐ Green Building Programs?

☐ Master Gardeners?

☐ Cooperative Extension?

☐ Local Colleges?

☐ Other

☐ Retail and wholesale outlet; name(s) and type(s) of programs:

Partnering Programs - Newsletters

Number of newsletters per year

Number of customers per year

Partnering with Other Utilities

Describe other utilities your agency partners with, including electrical utilities

Conservation Gardens

Describe water conservation gardens at your agency or other high traffic areas or new

Landscape contests or awards

Describe water wise landscape contest or awards program conducted by your agency

Comments:

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Link to FAQs

View MOU

BMP 1.4 Retail Conservation Pricing

2009

If you are reporting more rate structures than this form allows, add the structures to a spreadsheet and send the file to natalie@cuwcc.org.

Implementation (Water Rate Structure)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class

Rate Structure	Customer Class	Total Revenue Commodity Charges	Total Revenue Customer Meter/Service (Fixed Charges)
Increasing Block		2,061,553.32	456,429.61
Increasing Block		554,105.71	95,484.87
Uniform		219,474.34	33,601.66
Uniform		89,499.82	17,747.82
Uniform		54,595.92	7,010.14
Uniform		132.94	2,753.88
Uniform			

Implementation Option (Conservation Pricing Option)

- (•) Use Annual Revenue As Reported
- ( ) Use Canadian Water & Wastewater Association Rate Design Model

If CWWA is select, enter the file name and email the spreadsheet to natalie@cuwcc.org

Retail Waste Water (Sewer) Rate Structure by Customer Class

Agency Provide Sewer Service ( ) Yes (•) No

Select the Retail Waste Water(Sewer) Rate Structure assigned to the majority of your customers within a specific customer class.

Rate Structure	Customer Class	Total Revenue Commodity Charges	Total Revenue Customer Meter/Service (Fixed Charges)
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			

Comments:

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

Link to FAQs

2009

BMP 2.2 School Education Programs, Retail Agencies

View MOU

School Programs

Is a wholesale agency implementing school programs which can be counted to help your agency comply with this BMP? ◉ Yes ○ No

Enter Wholesaler Names, separated by commas: Sonoma County Water Agency

☐ Materials meet state education framework requirements?

Description of Materials

☐ Materials distributed to K-6 Students?

Description of materials distributed to K-6 Students

Number of students reached

☐ Materials distributed to 7-12 Students?

Description of materials distributed to 7-12 Students

Number of Distribution

Annual budget for school education program

Description of all other water supplier education programs

School Program Activities

Classroom presentations:

Number of presentations

Number of attendees

Large group assemblies:

Number of presentations

Number of attendees

Children's water festivals or other events:

Number of presentations

Number of attendees

Cooperative efforts with existing science/water education programs (various workshops, science fair awards or judging) and follow-up:

Number of presentations

Number of attendees

Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):

Description

Number distributed

Staffing children's booths at events & festivals:

Number of booths | Number of attendees

Water conservation contests such as poster and photo:

Description

Number distributed

Offer monetary awards/funding or scholarships to students:

Number Offered | Total Funding

Teacher training workshops:

Number of presentations | Number of attendees

Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens, etc.:

Number of tours or field trips | Number of participants

College internships in water conservation offered:

Number of internships | Total funding

Career fairs/workshops:

Number of presentations | Number of attendees

Additional program(s) supported by agency but not mentioned above:

Description

Number of events (if applicable) | Number of participants

Total reporting period budget expenditures for school education programs (include all agency costs):

Comments

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Link to FAQs

2009 BMP 1.2 Water Loss Control

View MOU

AWWA Water Audit

Agency to complete a Water Audit & Balance Using The AWWA Software ◉ Yes ○ No

Email to natalie@cuwcc.org - Worksheets (AWWA Water Audit). Enter the name of the file below:

Water Audit Worksheep AWWA 2009

Water Audit Validity Score from AWWA spreadsheet

Agency Completed Training In The AWWA Water Audit Method ○ Yes ◉ No

Agency Completed Training In The Component Analysis Process ○ Yes ◉ No

Completed/Updated the Component Analysis (at least every 4 years)? ○ Yes ◉ No

Component Analysis Completed/Updated Date

Water Loss Performance

Agency Repaired All Reported Leaks & Breaks To The Extent Cost Effective ◉ Yes ○ No

Recording Keeping Requirements:

Date/Time Leak Reported	Leak Location
Type of Leaking Pipe Segment or Fitting	Leak Running Time From Report to Repair
Leak Volume Estimate	Cost of Repair

Agency Located and Repaired Unreported Leaks to the Extent Cost Effective ◉ Yes ○ No

Type of Program Activities Used to Detect Unreported Leaks

District staff undertakes regular leak detection exercises using District owned equipment and promptly fixes detected leaks.

Annual Summary Information

Complete the following table with annual summary information (required for reporting years 2-5 only)

Total Leaks Repaired	Economic Value Of Real Loss	Economic Value Of Apparent Loss	Miles Of System Surveyed For Leaks	Pressure Reduction Undertaken for loss reduction	Cost Of Interventions	Water Saved (AF/Year)

Comments:

The fields in red are required.

Agency name: Valley of the Moon Water District

Division name (Reporting unit): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

WATER SOURCES

2010

Service Area Population: 22,387 Census Tracts / Block Groups Coinciding with the District's Service Ar

Potable Water

Own Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
Valley of the Moon Water District	497.00	Groundwater	Wells
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	

Imported Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
Sonoma County Water Agency	2,542.00	Other	Wholesale Agency
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	
		Other	

Exported Water Name	AF/YEAR	Where Exported?

The fields in red are required.

Agency name: Valley of the Moon Water District

Division name (Reporting unit): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

Water Uses

2010

Potable Water Billed

Make sure to enter numbers in AF/Year.

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description
Single-Family	6,157.00	1,895.53	0.00		
Multi-Family	430.00	525.09	0.00		
Commercial	159.00	205.70	0.00		
Institutional	32.00	85.00	0.00		
Dedicated Irrigation	30.00	51.87	0.00		
Fire Lines	31.00	0.13	0.00		
Other					
Other					
Other					
Other					
Other					
Other					
Other					

Potable Water Un-Billed

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description
Institutional	2.00	0.32			
Dedicated Irrigation	2.00	0.11			
Other					
Other					
Other					
Other					
Other					
Other					
Other					
Other					
Other					
Other					
Other					

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Link to FAQs

View MOU

2010 BMP 3 Residential

○ Traditional (Sections A - D) ○ Flex Track (All Sections)

For Traditional Track please answer the fields within the traditional boxes.
For Flex Track option, please answer the fileds within the flex track boxes.
You must enter all measured water savings manually. For each measure entered, upload a spreadsheet with sufficient information to show the way that water savings were measured and that the measure was adequately tracked (i.e., all relevant data was collected) - in some cases there are specific data points also requested in form which are necessary to show that the measure was implemented as described.

A) Residential Assistance / Leak Detection

Traditional / Flex Track

	Single Family	Multi Family	Total Water Savings AF/YR	Measured Water Savings AF/YR
Total Number of Accounts	6,157.00	430.00		
Total Number of Participants Overall	42.00	0.00		
Total Number of Leak Det Surveys	42.00	0.00		
Total Number of Showerheads	200.00	150.00		
Total Number of Faucet Aerators	300.00	200.00		
Total Number of Landscape Water Survey	42.00	0.00		

Number of Other Components

Description of Other Components Distributed

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)

(Enter the file name and Email file to Natalie@cuwcc.org)

B) High Efficiency Clothes Washers (HECWs)

Traditional / Flex Track

Number of incentives for HECWs with an AVERAGE Water Factor of 5.0: 160.00

Are Financial incentives provided for HECWs ? ○ Yes ○ No

Has your Agency completed a HECW Market Penetration Study (this question does not impack your coverage report, purely informational) ○ Yes ○ No

HECW Market Penetration Study Documents (Enter the file name and Email file to Natalie@cuwcc.org)

Measured water savings (AF/Year)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

C) WaterSense Specification (WSS) Toilets

(Agency must complete information for at least one coverage option (For Traditional 1, 2, or 3; For Flex Tarck 1, 2, 3, or 4).
You are encouraged to include information on other coverage options, as available.
If seeking credit for additional water savings, you must select Flex Track option)

Traditional

1. Retrofiton Resale Ordinance is in Place ○ Yes ○ No

If Yes, Choose A File (Enter the file name and Email file to Natalie@cuwcc.org)

2. A 75% Market Saturation Achieved ○ Yes ○ No

If yes, Choose A File (Enter the file name and Email file to Natalie@cuwcc.org)

3. WSS Toilets Installed

	Single Family	Multi Family
Number of WSS Toilets Installed	118.00	52.00
Measured Water Savings AF/YR		

Flex Track

4. Non-WSS Toilets

Type of Toilets	Single Family Number of Toilets	Single Family Water Savings	Multi Family Number of Toilets	Multi Family Water Savings
Select an Option				

Description of Other Non-WSS Type of Toilets

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

D) WSS for New Residential Development

(Agency must complete information for at least one coverage option.You are encouraged to include information on other coverageoptions, as available. If seeking credit for additional water savings you must select the Flex Track option)

Traditional

	Single Family	Multi Family
Residential development Rebates	Yes ○ No ○	Yes ○ No ○
Recognition Programs	Yes ○ No ○	Yes ○ No ○
Reduced connection Fees	Yes ○ No ○	Yes ○ No ○
Ordinances	Yes ○ No ○	Yes ○ No ○

New Development Ordinance
(Enter the file name and Email file to Natalie@cuwcc.org)

Number of new Single Family Units built in Service Area 13.00

Number of new Multi Family Units built in Service Area 0.00

Flex Track

In the following table, enter one row for each incentive typr program you offer

List of Incentive Amount

Incentive Type	Incentive Amount	Number of WSS fixtures installed	Number of Participating		Measured Water Savings	
			Single Family	Multi Family	Single Family	Multi Family

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

For Traditional Option, Stop Here, do not go further.
For Flex Track Option, please continue...

Flex Track Menu Options

In addition to the measures on the BMP List, the Flex Track menu options may be implemented to meet the savings goal for this BMP. Fill in the water savings measures that your agency has implemented.

E) High bill contact with single-family and multi-family customers

Measured water savings (AF/Year)

Select the Types of Contact:

☐ Email ☐ Phone ☐ Letter ☐ Others (describe)

Upload sample of contact contents (email, letter, etc.)
– if applicable; enter the file name and email file to Natalie@cuwcc.org

Who initiated the contact: (Please Specify customer, agencies, or both)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)

(Enter the file name and Email file to Natalie@cuwcc.org)

F) Educate residential customers about the behavioral aspects of water conservation

Measured water savings (AF/Year)

Select types of educational methods used:	**# Events**	**# Customers Reached**
☐ Workshop		
☐ Community Event		
☐ Letter		
☐ On-Site Visit		
☐ Phone Call		
☐ Water Survey		
☐ Website Hit		
☐ Door Hanger		
☐ Other (Describe)		

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

G) Notify residential customers of leaks on the customer's side of the meter

Type of Notification (Describe)

How many were sent out?

Measured water savings (AF/Year)

Upload sample notification method(email, letter, etc.) – if applicable

(Enter the file name and Email file to Natalie@cuwcc.org

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

H) Provide bill or surcharge refunds for customers to repair leaks on the customer's side of the meter.

Number of Leaks Repaired

Number of bill adjustments/credits/refunds provided

Describe here or upload a document with a policy description below:

Measured water savings (AF/Year)

Upload file describing Policy (Enter the file name and Email file to Natalie@cuwcc.org)

If you are using your own water-savings measure, send your supporting spreadsheet

Enter the file name and Email to Natalie@cuwcc.org

I) Provide unique water savings fixtures that are not included in the BMP list above

Fixture or Device	Description	Quantity Installes	Measured water savings (AF/YR)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

J) Install residence water use monitors.

Type of Monitor	Brand	Number Installed	Measured water savings (AF/Year)
☐ Dashboard			
☐ Leak Detector			
☐ Data Logger			

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

K) Participate in programs that provide residences with school water conservation kits.

Number of Kits Distributed

Kit contents (including model of fixtures)

List of what was actually installed in the homes (number of showerheads, aerators etc.).

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

L) Implement an automatic meter reading program for residential customers.

AMR or AMI Select an Option Type of Network Select an Option

Number of connections installed

☐ Is your agency using these to contact high water-use customers?

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

OTHER Types of Measures.

Type of Program	Sample / Description	Measured Water Savings (AF/YR)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

Comments

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

2010

Link to FAQs

View MOU

BMP 4 CII

Traditional ○ (Section A - L)

Flex Track ○ (All Sections)

For Traditional Track please answer the fields within the traditional boxes.
For Flex Track option, please answer the fileds within the flex track boxes.

You must enter all measured water savings manually in the summary cells on the right. For each measure entered, upload a spreadsheet with sufficient information to show the way that water savings was measured and that the measure was adequately tracked (i.e., all relevant data was collected) - in some cases there are specific data points also requested in the flex track data entry form which are necessary to show that the measure was implemented as described.

CII Type of measure implemented

Traditional

A) High - Efficiency Toilets.

Measured water savings (AF/Year)

Number: 7

Type of program: 2

Other type of program:

Flex Track

Do you accept the Council's default savings number for this measure? ○Yes ○No

Council's Annual Water Savings 0.041748 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

B) High -Efficiency Urinals (0.5 gpf)

Flex Track

Traditional

Number 0

Type of program

Other type of program

Measured water savings (AF/Year)

Do you accept the Council's default savings number for this measure? ◯Yes◯No

Council's Annual Water Savings 0.069086 AF per device

If not, Please provide the following

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

C) Ultra Low Volume Urinals (0.125 gpf)

Flex Track

Traditional

Number 0

Type of program Secect an Option

Other type of program

Measured water savings (AF/Year)

Do you accept the Council's default savings number for this measure? ◯Yes◯No

Council's Annual Water Savings 0.080603 AF per device

If not, Please provide the following

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

D) Zero Consumption Urinals (0.0 gpf)

Flex Track

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Do you accept the Council's default savings number for this measure? ◯Yes ◯ No

Flex Track

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

Council's Annual Water Savings 0.0921146 AF per device

If you are using your own water-savings measure, send your supporting spreadsheet

Enter the file name and Email to Natalie@cuwcc.org

E) Commercial High - Efficiency Single Load Clothes Washers

Traditional

Number 0

Type of program

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Counsil's default savings number for this measure ? ◯Yes◯No

Council's Annual Water Savings 0.116618 AF per device

If not , Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet

Enter the file name and Email to Natalie@cuwcc.org

F) Cooling Tower Conductivity Controllers.

Traditional

Number 0

Type of program Secect an Option

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ◯Yes◯No

Council's Annual Water Savings 1.032250 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet

Enter the file name and Email to Natalie@cuwcc.org

G) Cooling Tower pH Controllers

Traditional

Number: 0

Type of program: Select an Option

Other type of program:

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ○Yes○No

Council's Annual Water Savings 3.981543 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet

Enter the file name and Email to Natalie@cuwcc.org

H) Connectionless Food Steamers.

Traditional

Number: 0

Type of program

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ○Yes○No

Council's Annual Water Savings 0.25 AF per Steamer Compartment

mIf not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet

Enter the file name and Email to Natalie@cuwcc.org

I) Medical Equipment Steam Sterilizers

Flax Track

Traditional

Number: 0

Type of program

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure? ○Yes○No

Council's Annual Water Savings 1.538 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet Enter the file name and Email to Natalie@cuwcc.org

J) Water - Efficient Ice Machines.

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ○Yes○No

If not, Please provide the following:

Council's Annual Water Savings 0.0834507 AF per device

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet Enter the file name and Email to Natalie@cuwcc.org

K) Pressurized Water Brooms.

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure? ○Yes○No

Council's Annual Water Savings 0.1534 AF per device

Flex Track

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

L) Dry Vacuum Pumps.

Traditional

Number 0

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Flex Track

Do you accept the Council's default savings number for this measure ? ○Yes○No

Council's Annual Water Savings 0.064 AF per device

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Traditional Reporting Stop Here, Do not continue

Flex Track Reporing Please Continue...

M) Industrial Process Water Use Reduction.

Number

Type of program Select an Option

Other type of program

Measured water savings (AF/Year)

Type of Process Water Reduced

If re-using water, what was the secondary use of the water? (such as pre-rince cycle or landscaping)

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

N) Commercial Laundry Retrofits.

Number of customers

Measured water savings (AF/Year)

Type of customer

- ☐ hotels
- ☐ campuses
- ☐ prisons
- ☐ laundromats

Lease / own machines

○ Lease ○ Own Machines ○ Both

Type of program

Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

O) Industrial Laundry Retrofits.

Measured water savings (AF/Year)

Total Number of customers

Total Volume of laundry processed annually

Select an Option

Type of program

Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

P) Filter Upgrades (for pools, spas, and fountains).

Number of pools upgraded

Number of spas upgraded

Number of fountains upgraded

Measured water savings (AF/Year)

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Q) Car Wash Reclamation Systems

Measured water savings (AF/Year)

	Conveyor	In-bay
Total Number of program participants (accounts)		
Total Number of vehicles washed annually		

Do you accept the Council's default savings number for this measure? ○Yes○No

Council's Annual Water Savings 0.00004607 (or 15 gals) per vehicle

If not, Please provide the following:

Total Measured Water Savings(AF/Year)	
Measure life (years)	
Lifetime water savings (years)	

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

R) Wet Cleaning.

		Measured water savings (AF/Year)
Brief description of program		

Total Measured Water Savings(AF/Year)	
Measure life (years)	
Lifetime water savings (years)	

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

S) Water Audits (To avoid double counting, do not include device/replacement water savings.)

Number of water audits by type of business

		Measured water savings (AF/Year)
Auto		
Food		
Health		
Hotels		

Manufacturing	
Membership	
Multi-use	
Office	
Religious	
Restaurant	
Retail/ Wholesale	
School	
Other (with description)	
Description of Other	

Total Measured Water Savings(AF/Year)	
Measure life (years)	
Lifetime water savings (years)	

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

T) Clean In Place (CIP) Technology (such as bottle sterilization in a beverage processing plant)

		Measured water savings (AF/Year)
Number of customers		
Type of program	Select an Option	
Other type of program		

Total Measured Water Savings(AF/Year)	
Measure life (years)	

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

U) Waterless Wok

Number

Type of program — Select an Option

Measured water savings (AF/Year)

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

V) Alternative On-site Water Sources (For Rain Water Harvesting, commercial rain barrels are excluded. For Foundation Drain Water, exclude permeable paving.)

Measured water savings (AF/Year)

Select type	Number	Description
☐ Cooling Condensate		
☐ Foundation Drain Water		
☐ Gray Water		
☐ Storm Water		
☐ Rain Water		
☐ Pond and Water Feature Recycling		

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

W) Sub - metering

Measured water savings (AF/Year)

Select type	Number	Description
☐ Condominiums		
☐ Apartments		
☐ Mobile Homes		

Do you accept the Council's default savings numbers for this measure? ○Yes ○No

Council's Annual Water Savings
Appartments & Condos=0.024419 AF/YR
Mobile Home = 0.056774 AF/Yr

If not, Please provide the following:

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

X) High Efficiency Showerheads

Measured water savings (AF/Year)

Number

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Y) Faucet Flow Restrictors

Measured water savings (AF/Year)

Number

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Z) Water Efficient Dishwashers

Measured water savings (AF/Year)

Select type — Number

- ☐ Rack
- ☐ Conveyor
- ☐ Other

Description of Other

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)
Measure life (years)
Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

AA) Hot Water on Demand

Measured water savings (AF/Year)

Number
Type of program — Select an Option
Other type of program

Total Measured Water Savings(AF/Year)
Measure life (years)
Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

BB) Pre-rinse Spray Valves of 1.3 gpm (gallons per minute) or less

Measured water savings (AF/Year)

Number
Type of program — Select an Option
Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

CC) Central Flush Systems

Measured water savings (AF/Year)

Number

Type of program — Select an Option

Other type of program

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

Other Measures chosen by the Agency

Measured water savings (AF/Year)

Description of program

Sample (if applicable)

Total Measured Water Savings(AF/Year)

Measure life (years)

Lifetime water savings (years)

If you are using your own water-savings measure, send your supporting spreadsheet
Enter the file name and Email to Natalie@cuwcc.org

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

2010

BMP 5 Landscape

Link to FAQs

View MOU

○ **Traditional** ○ **Flex Track**

For Traditional Track please answer the fields within the traditional boxes.
For Flex Track option, please answer the fileds within the flex track boxes.
You must enter all measured water savings manually. For each measure entered, upload a spreadsheet with sufficient information to show the way that water savings were measured and that the measure was adequately tracked (i.e., all relevant data was collected) - in some cases there are specific data point salso requested in form which are necessary to show that the measure was implemented as described.

Accounts with Dedicated Irrigation Meters

Traditional

Number of dedicated irrigation meter accounts	30.00
Number of dedicated irrigation meter accounts with water budgets	30.00
Aggregate water use for dedicated non-recreational landscape accounts with budgets	52.00
Aggregate acreage assigned water budgets for dedicated non-recreational landscape accounts with budgets	14.87
Preserved water use records and budgets for customers with dedicated landscape irrigation accounts for at least four years	○ Yes ○ No

Flex Track

Water Savings from Accounts with dedicated irrigation meters with water budgets (Acre Feet)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)

(Enter the file name and Email file to Natalie@cuwcc.org)

Technical Assistance

Traditional

Number of Accounts 20% over-budget	0.00
Number of accounts 20% over-budget offered technical assistance	0.00
Number of accounts 20% over-budget accepting technical assistance	0.00

Measured water savings (AF/Year)

Flex Track

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)

(Enter the file name and Email file to Natalie@cuwcc.org)

Irrigation Water Use Surveys for Mixed-use and Un-metered Accounts

Traditional

Number of mixed use and un-metered accounts	0.00
Number of irrigation water use surveys offered (cumulative, all years)	0.00
Number of irrigation water use surveys accepted (cumulative)	0.00
Can your Agency estimate the amount of landscape acreage for mixed use and Un-metered accounts	○ Yes ○ No
If Yes, Aggregate acreage for mixed use and Un-metered accounts	

Measured water savings (AF/Year)

Flex Track

Esrimated water demand from acreage for mixed use and Un-metered accounts	
Annual water savings by customers receiving irrigation water savings surveys and implementing recomendations	

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

Financial Incentives

Traditional

Have you implemented and maintained an irrigation equipment retrofit incentive program? ○ Yes ○ No

Number of incentives	Dollar value of incentives	Incentive Types	Measured Water Savings (AF/YR)

Flex Track

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

Traditional Reporting Stop Here, Do not continue
Flex Track Reporing Please Continue...

Landscape Flex Track Measure Types

1. Monitor and report on landscape water use

A) Measure landscapes and develop water budgets for customers with dedicated landscape meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules (such as faxes, twitter, etc. not included in the previous sections).

Measured water savings (AF/Year)

Enter the Number of sites with:

Dedicated Mixed Meters	
Water Budgets	
Landscape Measurements	
Others (describe)	

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

B) Measure landscapes and develop water budgets for customers with Mixed Use meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules.

Measured water savings (AF/Year)

Enter the Number of sites with:

Dedicated Mixed Meters	
Water Budgets	
Landscape Measurements	
Others (describe)	

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

C) Establish agency-wide water budget. (Note that: ETo based water budget in the MWELO changed in 2010 from .8ETo to .7ETo.)

Measured water savings (AF/Year)

Agency-wide total irrigated area Per-2010		(Acres)
Agency-wide totak irrigated area Post-2010		(Acres)
Amount of Water Used		(AF/Acre)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

D) Establish agency-wide, sector-based irrigation goal to reduce water use, based on seasonality.

Measured water savings (AF/Year)

Number of minimum irrigation goal (AF/Acre)

Amount of Water Used per Period (AF/Period)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

2. Provide technical landscape resources and training

A) Upon customer requests, provide landscape irrigation management and landscape design information and resources: provide assistance, answer customer questions, respond to run-off and high-bill calls.

Measured water savings (AF/Year)

Enter the Number of:

Contacts In Person

Contacts over the phone

Contacts via Email

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

B) Perform landscape & irrigation audits: including irrigation scheduling, plant information, and landscape area measurement.

Measured water savings (AF/Year)

Enter the Number of:

Audits conducted per year

Measurement of square footage of Turf areas

Measurement of square footage of NON Turf areas

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

C) Sponsor, co-sponsor, promote, or support landscape workshops, training, presentations and other technical educational events for homeowners and professionals: design, installation, maintenance, water management.

Enter the Number of:

Events

Participants

List Type or Title of Events

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

D) Establish Time-of-Day Irrigation Restrictions.

Yes No

Describe Restrictions:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

E) Establish Day-of-Week Irrigation Restrictions. Yes No

Describe Restrictions:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data)
(Enter the file name and Email file to Natalie@cuwcc.org)

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3. Provide incentives

A) Establish Landscape budget-based rates. ◯ Yes ◯ No

Describe Rates:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

B) Provide incentives for conversions from mixed-use meters to dedicated landscape meters.

Number of Conversions:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

C) Provide incentives for installing sub-meters to separate landscape water use

Number of meters installed:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

D) Provide incentives for irrigation equipment upgrades that improve distribution uniformity, irrigation efficiency, or scheduling capabilities.

Select types of irrigation equipment upgrades:	Number of devices installed
☐ Controllers	
☐ Emitters	
☐ Soil moisture sensors	
☐ Pressure Regulators	
☐ Rain shut off devices	
☐ Other (describe)	

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

E) Provide incentives for the reduction of water use over an irrigated area, or reduction in the size of the irrigated area due to replacement of turf or other high water-using plants with low water-using plants, artificial turf, or permeable surfaces.

Acreage of live turf converted to low water-using plants, artificial turf, or permeable surfaces: _____ Acres

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

F) Provide incentives for conversions from potable to recycled water.

Number of Conversions: _____

Number of Incentives: _____

Funds Invested: _____

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

G) Provide incentives for the use of alternative sources of water in the landscape (i.e. gray water, rainwater, cisterns, etc.)

Number of Conversions: _____

Number of Incentives: _____

Funds Invested: _____

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

---

4. Participate in local and regional planning and regulatory activities

A) Collaborate with planning agencies at the local and regional level, other water suppliers in the area and stakeholders in response to state or federal requirements such as the State Model Water Efficient Landscape Ordinance and AB 1881. Participate in the development, review, implementation, and enforcement of requirements for new developments. Provide water use data to planning agencies.

Measured water savings (AF/Year)

Public Information Programs List

Agency Type	Describe Involvement	If Ohter: Enter Name	Actions

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

B) Establish or participate in a water conservation advisory committee or other community outreach effort to drive market transformation and exchange information about landscape water conservation with developers, community-based organizations, homeowners associations, residential customers, landscape professionals, educators, other water suppliers in region.

◯ **Yes** ◯ **No**

Describe Involvement:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

C) Participate in regional efforts: integrated water resource management, watershed management, NPDES permit agencies, etc.

◯ **Yes** ◯ **No**

Describe Involvement:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

---

5. Develop a holistic approach to landscape water use efficiency

A) Develop and implement a comprehensive landscape water conservation program for all customers. Target marketing efforts to those most likely to result in benefits to both customer and Agency.

Describe Program:

Measured water savings (AF/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file to Natalie@cuwcc.org)

---

6. Other Measures

A) Other Landscape Measures.

Describe Other Landscape Measures:

Measured water savings (Af/Year)

If there is Water Savings in this measure, upload the Methodology Spreadsheet (backup data) (Enter the file name and Email file Natalie@cuwcc.org)

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

Link to FAQs

2010

BMP 2.1 Public Outreach - Retail Reporting

View MOU

Is a Wholesale Agency Performing Public Outreach?

Are there one or more wholesale agencies performing public outreach which can be counted to help your agency comply with the BMP? ○ Yes ○ No

Enter the name(s) of the wholesale agency (comma delimited): Sonoma County Water Agency

Is your agency performing public outreach?

Report a minimum of 4 water conservation related contacts your agency had with the public during the year.

Public Information Programs List

Did at least one contact take place during each quarter of the reporting year? ✔

Number of Public Contacts		Public Information Programs	
41,400	Newsletter articles on conservation		
15,000	Newsletter articles on conservation		
1,200	Website		
4,500	General water conservation information		
	Select a public contact		

Contact with the Media

Are there one or more wholesale agencies performing media outreach which can be counted to help your agency comply with the BMP? ○ Yes ○ No

Enter the name(s) of the wholesale agency (comma delimited): Sonoma County Water Agency

OR Retail Agency (Contacts with the Media)

Media Contacts List

Did at least one contact take place during each quarter of the reporting year?

Number of Media Contacts	Did at least one contact take place during each quarter of the reporting year?	Media Contact Types	
	Select a type of media contact		
	Select a type of media contact		
	Select a type of media contact		
	Select a type of media contact		
	Select a type of media contact		
	Select a type of media contact		

Is a Wholesale Agency Performing Website Updates?

Did one or more CUWCC wholesale agencies agree to assume your agency's responsibility for meeting the requirements of and for CUWCC reporting of this BMP? ○ Yes ○ No

Enter the name(s) of the wholesale agency (comma delimited)

Sonoma County Water Agency

Is Your Agency Performing Website Updates?

Enter your agency's URL (website address):

Describe a minimum of four water conservation related updates to your agency's website that took place during the year:

Did at least one Website Update take place during each quarter of the reporting year? ○ Yes ○ No

Public Outreach Annual Budget

Enter budget for public outreach programs. You may enter total budget in a single line or brake the budget into discrete categories by entering many rows. Please indicate if personnel costs are included in the entry.

Category	Amount		Personnel Costs Included? If yes, check the box.	Comments	

Comments:

Sonoma County Water Agency is completing this BMP on behalf of Valley of the Moon Water District.

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

Link to FAQs

2010

BMP 2.1 Public Outreach Cont'd

View MOU

Public Outreach Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question related to your budget (Section 2.1.7, above). For example, if you included personnel costs in the budget entered above, be sure to include them here as well.

Expense Category	Expense Amount	Personnel Costs Included?	
			If yes, check the check box.

Additional Public Information Program

Please report additional public information contacts. List these additional contacts in order of how your agency views their importance / effectiveness with respect to conserving water, with the most important/ effective listed first (where 1 = most important).

Were there additional Public Outreach efforts? ○ Yes ○ No

Public Outreach Additional Information

Public Information Programs	Importance	

Social Marketing Programs

Branding

Does your agency have a water conservation "brand," "theme" or mascot? ○ Yes ○ No

Describe the brand, theme or mascot.

Market Research

Have you sponsored or participated in market research to refine your message? ○ Yes ○ No

Market Research Topic

Brand Message

Brand Mission Statement

Community Committees

Do you have a community conservation committee? ○ Yes ○ No

Enter the names of the community committees:

Training

Training Type	# of Trainings	# of Attendees	Description of Other

Social Marketing Expenditures

Public Outreach Social Marketing Expenses

Expense Category	Expense Amount	Description

Partnering Programs - Partners

Name **Type of Program**

☐ CLCA?

☐ Green Building Programs?

☐ Master Gardeners?

☐ Cooperative Extension?

☐ Local Colleges?

☐ Other

☐ Retail and wholesale outlet; name(s) and type(s) of programs:

Partnering Programs - Newsletters

Number of newsletters per year

Number of customers per year

Partnering with Other Utilities

Describe other utilities your agency partners with, including electrical utilities

Conservation Gardens

Describe water conservation gardens at your agency or other high traffic areas or new

Landscape contests or awards

Describe water wise landscape contest or awards program conducted by your agency

Comments:

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

Link to FAQs

2010

BMP 2.2 School Education Programs, Retail Agencies

View MOU

School Programs

Is a wholesale agency implementing school programs which can be counted to help your agency comply with this BMP? ○ Yes ○ No

Enter Wholesaler Names, separated by commas: Sonoma County Water Agency

☐ Materials meet state education framework requirements?

Description of Materials

☐ Materials distributed to K-6 Students?

Description of materials distributed to K-6 Students

Number of students reached

☐ Materials distributed to 7-12 Students?

Description of materials distributed to 7-12 Students

Number of Distribution

Annual budget for school education program

Description of all other water supplier education programs

School Program Activities

Classroom presentations:

Number of presentations

Number of attendees

Large group assemblies:

Number of presentations

Number of attendees

Children's water festivals or other events:

Number of presentations

Number of attendees

Cooperative efforts with existing science/water education programs (various workshops, science fair awards or judging) and follow-up:

Number of presentations

Number of attendees

Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):

Description

Number distributed

Staffing children's booths at events & festivals:

Number of booths | Number of attendees

Water conservation contests such as poster and photo:

Description

Number distributed

Offer monetary awards/funding or scholarships to students:

Number Offered | Total Funding

Teacher training workshops:

Number of presentations | Number of attendees

Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens, etc.:

Number of tours or field trips | Number of participants

College internships in water conservation offered:

Number of internships | Total funding

Career fairs/workshops:

Number of presentations | Number of attendees

Additional program(s) supported by agency but not mentioned above:

Description

Number of events (if applicable) | Number of participants

Total reporting period budget expenditures for school education programs (include all agency costs):

Comments

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

CUWCC

2010

Link to FAQs

View MOU

BMP 1.4 Retail Conservation Pricing

If you are reporting more rate structures than this form allows, add the structures to a spreadsheet and send the file to natalie@cuwcc.org.

Implementation (Water Rate Structure)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class

Rate Structure	Customer Class	Total Revenue Commodity Charges	Total Revenue Customer Meter/Service (Fixed Charges)
Increasing Block		2,061,553.32	456,429.61
Increasing Block		554,105.71	95,484.87
Uniform		219,474.34	33,601.66
Uniform		89,499.82	17,747.82
Uniform		54,595.92	7,010.14
Uniform		132.94	2,753.88
Uniform			

Implementation Option (Conservation Pricing Option)

- ○ Use Annual Revenue As Reported
- ○ Use Canadian Water & Wastewater Association Rate Design Model

If CWWA is select, enter the file name and email the spreadsheet to natalie@cuwcc.org

Retail Waste Water (Sewer) Rate Structure by Customer Class

Agency Provide Sewer Service ○ Yes ○ No

Select the Retail Waste Water(Sewer) Rate Structure assigned to the majority of your customers within a specific customer class.

Rate Structure	Customer Class	Total Revenue Commodity Charges	Total Revenue Customer Meter/Service (Fixed Charges)
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			
Select a Rate Struc			

Comments:

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

BMP 1.3 Metering with Commodity

2010

Link to FAQs

See the complete MOU: View MOU

See the coverage requirements for this BMP:

Implementation

Does your agency have any unmetered service connections? Yes / No

If YES, has your agency completed a meter retrofit plan? Yes / No

Enter the number of previously unmetered accounts fitted with meters during reporting year: 0

Are all new service connections being metered? Yes / No

Are all new service connections being billed volumetrically? Yes / No

Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters? Yes / No

Please Fill Out The Following Matrix

Account Type	# Metered Accounts	# Metered Accounts Read	# Metered Accounts Billed by Volume	Billing Frequency Per Year	# of estimated bills/yr
Single-Family	6,157	6,157	6,157	Bi-monthly	6
Multi-Family	430	430	430	Bi-monthly	6
Commericial	159	159	159	Bi-monthly	6
Instiitional	32	32	32	Bi-monthly	6
Dedicated Irrigatic	30	30	30	Bi-monthly	6
Fire Lines	31	31	31	Bi-monthly	6
Other				Other	
Other				Other	
Other				Other	
Other				Other	

Number of CII Accounts with Mixed-use Meters: 191

Number of CII Accounts with Mixed-use Meters Retrofitted with Dedicated Irrigation Meters during Reporting Period: 0

Feasibility Study

Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? Yes / No

If YES, please fill in the following information:

A. When was the Feasiblity Study conducted

B. Describe, upload or provide an electronic link to the Feasibility Study Upload File

File name(s): Email files to natalie@cuwcc.org Enter the file name here e.g. WaterWastePreventionOrdinance

Web address(s) URL: comma-separated list Enter the URL to your documentation.

Comments:

The fields in red are required.

Agency name: Valley of the Moon Water District

Reporting unit name (District name): Valley of the Moon Water District

Reporting unit number: 6,277

Primary contact:

First name: Shari

Last name: Walk

Email: swalk@vomwd.com

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Link to FAQs

2010

BMP 1.1 Operations Practices

Comments:

See the complete MOU: View MOU

See the coverage requirements for this BMP:

Conservation Coordinator

Conservation Coordinator ◯ Yes ◯ No

Contact Information

First Name	Shari
Last Name	Walk
Title	Office Supervisor
Phone	707-996-1037
Email	swalk@vomwd.com

Note that the contact information may be the same as the primary contact information at the top of the page. If this is your case, excuse the inconvenience but please enter the information again.

Water Waste Prevention

Water Agency shall do one or more of the following:

a. Enact and enforce an ordinance or establish terms of service that prohibit water waste
b. Enact and enforce an ordinance or establish terms of service for water efficient design in new development
c. Support legislation or regulations that prohibit water waste
d. Enact an ordinance or establish terms of service to facilitate implementation of water shortage response measures
e. Support local ordinances that prohibit water waste
f. Support local ordinances that establish permits requirements for water efficient design in new

To document this BMP, provide the following:

a. A description of, or electronic link to, any ordinances or terms of service
b. A description of, or electronic link to, any ordinances or requirements adopted by local jurisdictions or regulatory agencies with the water agency's service area.
c. A description of any water agency efforts to cooperate with other entities in the adoption or enforcement of local requirement
d. description of agency support positions with respect to adoption of legislation or regulations

You can show your documentation by providing files, links (web addresses), and/or entering a description.

File name(s): Email files to natalie@cuwcc.org: Ordinance 1007.Adopted 060600 & Ordinance 1009.Adopted 030309

Web address(s) URL: comma-separated list:

Enter a description: VOMWD is a member of the Sonoma Marin Saving Water Partnership - A partnership among all the retail water contractors and Marin Municipal Water District formed to implement water conservation measures regionally.

Appendix G
CUWCC Form (Targets/Compliance)

California Urban Water Conservation Council

TARGETS / COMPLIANCE
(CUWCC MOU)

Baseline / Initial GPCD
(Use option buttons to select)

GPCD in 2006 ○	137.1
Baseline GPCD (1997 to 2006) ◉	146.2
GPCD in 2010	102.9
GPCD Target for 2018	119.9

Potable Water GPCD for each Year in the Baseline Period

Year	GPCD
2006	137.1
2005	134.2
2004	145.9
2003	139.2
2002	141.5
2001	145.3
2000	159.5
1999	158.9
1998	142.9
1997	157.4

Biennial GPCD Compliance Table

Year	Report	Target		Highest Acceptable Bound	
		% Base	GPCD	% Base	GPCD
2010	1	96.4%	140.9	100%	146.2
2012	2	92.8%	135.7	96.4%	140.9
2014	3	89.2%	130.4	92.8%	135.7
2016	4	85.6%	125.1	89.2%	130.4
2018	5	82.0%	119.9	82.0%	119.9

Monthly GPCD Data for Weather Normalization

Fiscal Year Ending	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
2010	116.3	166.8	150.6	107.6	96.6	76.1	67.6	64.6	83.4	73.7	93.1	138.0
Baseline avg*	218.7	209.4	191.6	163.5	109.1	98.2	98.9	86.6	102.6	121.1	157.2	197.3

* The average for each month is based on the baseline period 1997 to 2006

Appendix H
UWMP Checklist

Valley of the Moon Water District

DWR Table I-2 Urban Water Management Plan checklist, organized by subject

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		Section 1.2.1 Table 1.2
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1.2.2 Table 1.3 Appendix A.1
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Section 1.3 Appendix A.4
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Section 1.3
55	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642		Section 1.2
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Section 1.2.2 Appendix A.2 Appendix A.3
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Section 1.3 Appendix A.4
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Section 1.3 Table 1.4

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Section 1.3 Appendix A.5
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Section 1.3
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 2.1
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2.2 Table 2.1
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2.3
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.3 Table 2.2
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2.3
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 3.1.1 Section 3.1.2
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 1.3 Table 1.4

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		Section 6 VOMWD reports through Regional Alliance described in Section 3.1
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Section 3.2
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Section 3.3 Table 3.16
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 3.2.6 Table 3.15
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 4.1
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 4.3
15	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management.	10631(b)(1)		Section 4.3.2

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
16	Describe the groundwater basin.	10631(b)(2)		Section 4.3.3
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		Section 4.3.3.3
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Not Applicable
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Section 4.3.4
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 4.3.4
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 4.3.5
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4.4
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 4.8 Table 4.12
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 4.5
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 4.6

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Section 4.6.2
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 4.6.2 Tables 4.5 and 4.6
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Not Applicable
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 4.6.3 Table 4.7
49	The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	10633(e)		Section 4.6.3 Section 4.6.4 Table 4.8
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		Section 4.6.5 Table 4.9
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		Section 4.6.3
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b]				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 3.4 and Section 6
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5.2
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Section 5.3 Section 5.4

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 5.7 Table 5.9
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)		Section 5.7.2 Table 5.5
37	Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)		Section 5.7.3 Table 5.10
38	Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)		Section 5.7.4 Table 5.11
39	Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)		Section 5.7.4 Table 5.9
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 5.7.4 Table 5.12
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)		Section 5.7.5
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Section 5.7.6 Appendix D
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 5.7.7
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 5.4

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5.5
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 6.1 Section 6.2
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 6.1 Section 6.2
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Section 6.3
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Section 6
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Appendix F

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.